

UfoPlan Vorhaben FKZ UM 12 41 158

Skizzierung eines schrittweisen Übergangs vom CDM zu Neuen Marktmechanismen und einem Emissionshandelssystem und des begleitenden Kapazitätsaufbaus

Synthesis Report:

Practicability of Transitioning from CDM to Future Climate Policy Instruments

Mülheim / Berlin, June 2015

Authors:

Björn Dransfeld

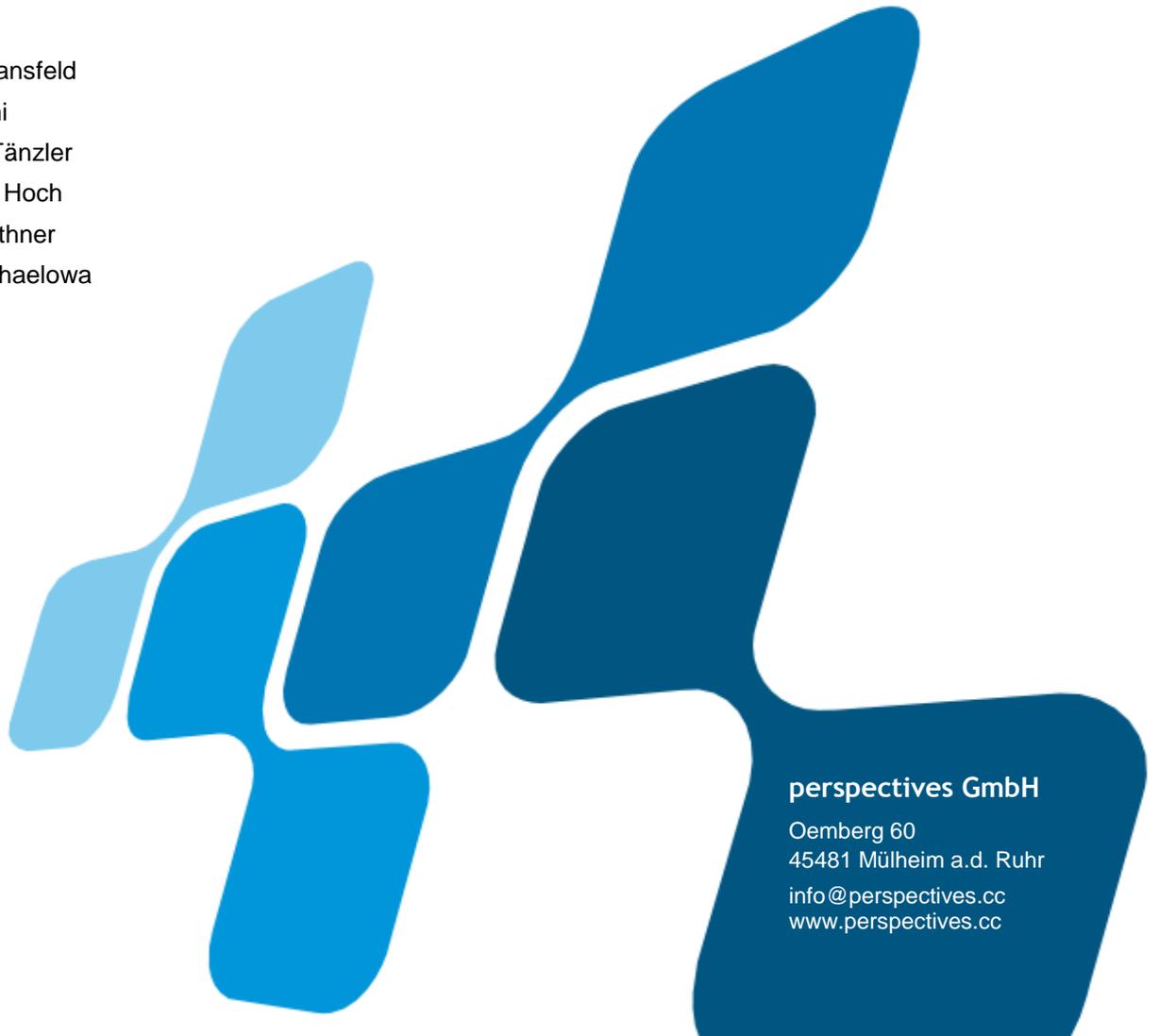
Aki Kachi

Dennis Tänzler

Stephan Hoch

Lena Ruthner

Axel Michaelowa



perspectives GmbH

Oemberg 60
45481 Mülheim a.d. Ruhr

info@perspectives.cc
www.perspectives.cc

Contents

Acronyms	II
List of Figures	IV
List of Textboxes	IV
Executive Summary	V
1. Background	1
2. Landscape of Mechanisms and Instruments	3
2.1. Mapping of Mechanisms.....	3
2.2. Distinction of different levels: Mechanisms and Instruments	5
3. Pathways for the Transition of Mechanisms.....	9
3.1. General transition options for CDM activities	9
3.2. Identifying ideal-types of suitable transition pathways	12
3.2.1. Pathway 0: Towards NMM, NAMAs and ETS in countries w/o CDM legacy	13
3.2.2. Pathway 1: CDM to NMM (STM) and ETS.....	14
3.2.3. Pathway 2: Expanded CDM with net mitigation benefits (CDM+)	14
3.2.4. Pathway 3: Continued CDM as offsetting vehicle	15
3.2.5. Pathway 4: Transformation of CDM activities into instruments under a NAMA	16
4. Evaluation of selected countries	17
4.1. Chile.....	17
4.2. China	18
4.3. Colombia.....	20
4.4. Indonesia	21
4.5. Kazakhstan	22
4.6. Mexico	24
4.7. Peru	24
4.8. Thailand.....	25
4.9. Turkey.....	27
4.10. Vietnam.....	28
5. Reflection of research findings	29
6. Conclusion	31
References	34

Acronyms

AAU	Assigned Amount Units
ADP	Ad Hoc Working Group on the Durban Platform for Enhanced Action
AOSIS	Alliance of Small Island States
BAU	Business as Usual Scenario
CDM	Clean Development Mechanism
CDM EB	Clean Development Mechanism Executive Board
CCERs	Chinese Certified Emission Reductions
CERs	Certified Emission Reductions
CME	Coordinating/Managing Entity
COP	Conference of the Parties
CP	Commitment Period
CPA	Component Project Activities
DNA	Designated National Authority
DOE	Designated Operational Entity
EB	Executive Board
EIG	Environmental Integrity Group
EPC	Energy Performance Certificate Scheme
ER	Emission Reduction
ERs	Emissions Reductions
ETS	Emissions Trading Scheme
EU	European Union
EU ETS	European Union Emissions Trading Scheme
FVA	Framework for Various Approaches
FYP	Five Year Plan
GCF	Green Climate Fund
GDP	Gross Domestic Product
GEF	Global Environment Facility
GHG	Greenhouse Gas
Gol	Government of Indonesia
HFCs	Hydro Fluoro Carbons
IAR	International Assessment and Review
ICA	International Consultations and Analysis
IET	International Emissions Trading
JI	Joint Implementation
LCDS	Low Carbon Development Strategy
LDCs	Least Developed Countries
LECB	Low Emission Capacity Building Program
LULUCF	Land-use change and forestry
MAPS	Mitigation Action Plans & Scenarios

M&P	Modalities and procedures
MCEE	Mechanism for Carbon-Efficient Economies
MRV	Measurement, Reporting and Verification
N ₂ O	Nitrous Oxide
NAE	Net Avoided Emissions
NAMA	Nationally Appropriate Mitigation Actions
NCS	Nusantara Carbon Scheme
NDRC	National Development and Reform Commission China
NMM	New Market Mechanism
PMR	Partnership for Market Readiness
PoA	CDM Programme of Activities
PSF	Private Sector Facility (of the Green Climate Fund)
QA/QC	Quality Assurance / Quality Control
RAD-GRK	Regional Action Plan for Greenhouse Gas Emissions Reduction
RAN-GRK	National Action Plan for Greenhouse Gas Reduction
RBF	Results-based Finance
REDD	Reducing Emissions from Deforestation and Forest Degradation
SBs	Standardized Baselines
SBSTA	Subsidiary Body for Scientific and Technological Advice
SCM	Sectoral crediting mechanism
STM	Sectoral trading mechanism
TGO	Thailand Greenhouse Gas Management Organization
T-VER	Thailand Voluntary Emission Reduction Program
V-ETS	Thailand Voluntary Emissions Trading Scheme
T-COP	Thailand Carbon Offsetting Program
UNFCCC	United Nations Framework Convention on Climate Change
USA	United States of America
VCS	Verified Carbon Standard

List of Figures

Figure 1: Mapping existing and future market mechanisms under the UNFCCC	5
Figure 2: Policy instruments under future market mechanisms (non-exhaustive)	6
Figure 3: Different levels of decision making for mechanisms and instruments	7
Figure 4: Different Sectoral Coverage of Mechanisms	9
Figure 5: Potential Pathways for Transition of Mechanisms	13

List of Textboxes

Textbox 1: Illustrative comparison of CDM and NMM measures in a fictitious city.....	8
Textbox 2: Expert dialogue on future climate policy instruments	30

Executive Summary

Current trends in developing country approaches to climate policy show that market based mechanisms will play an increasingly important role in the regulation of greenhouse gases. New mechanisms do not need to be invented “from scratch”, but can build on existing elements and know-how of established mechanisms such as the Clean Development Mechanism (CDM). The evolution of the CDM’s regulatory framework and methodological toolkit shows that the CDM functions as a laboratory for upscaling of market mechanisms. This study explores options for future market-based mitigation frameworks in Non-Annex 1 countries, starting with the CDM and moving towards various possible forms of a multilateral new market mechanism (NMM) under the UNFCCC, domestic emissions trading schemes (ETS) or domestic non-ETS solutions implemented as Nationally Appropriate Mitigation Actions (NAMA).

Five potential transition options (“pathways”) from the CDM to future mechanisms (such as the NMM or supported NAMAs) have been analytically developed. Each features a further step with the countries moving to implement independent domestic instruments, e.g. under unilateral NAMAs. And each could serve as a potential progression of market-based climate policy instruments after the CDM:

- **Pathway 0 “Towards NMM, NAMAs and ETS in countries without CDM legacy”:** Implementing future mechanisms in countries that cannot build upon CDM experience.
- **Pathway 1 “CDM to NMM and to ETS”:** Absorbing CDM activities into a STM (NMM), with the ultimate goal of establishing a domestic ETS.
- **Pathway 2 “Expanded CDM with net mitigation benefits (CDM+)”:** Upscaling CDM activities to sectoral level with additional atmospheric benefits.
- **Pathway 3 “Continued CDM as offsetting vehicle”:** Continuation of CDM, potentially transitioning to domestic offsetting while maintaining a prominent role for international offsetting.
- **Pathway 4 “Transformation of CDM activities into instruments under a NAMA”:** Integrating CDM activities into a supported/credited NAMA, with the ultimate goal of continuing those activities without support/credit revenues.

The conceptual approach of transition pathways has in a first step been developed for hypothetical countries at various levels of development with different standings under existing frameworks. It has then been applied to the actual policy context of 10 countries: Chile, China, Colombia, Indonesia, Kazakhstan, Mexico, Peru, Thailand, Turkey and Vietnam. In some cases, the pathways could conceivably reflect a transitional path for the respective country’s climate policy. In other cases, a mix and match approach is emerging in the country simultaneously pursuing two or more climate policy instrument pathways. From the application of the various pathways, it becomes clear that new and innovative measures are being implemented in a much more bottom-up global climate policy framework, in many instances involving various kinds of (domestic) market instruments.

The assessment underscores that although their ambition levels vary, many countries are not waiting for a detailed international framework to move forward with their own domestic “post-CDM” policies. There is growing recognition that a multitude of diverse actions are already being – and will be – taken according to domestic circumstances, often with international support, but also with a great deal of initiative on the countries’ own part. In fact, many countries are driving these changes themselves through innovative uses of the CDM e.g. for domestic offsetting. In reflection of the conceptual and empirical findings derived in the context of this project, and the current state and trends of climate policy, the following trends emerge:

- Generally the CDM (in some cases, voluntary markets) has played an important role in helping to lay the foundation for further evolution of climate policies;
- Many countries have opted to continue CDM activities as domestic offsetting programs, thereby creating a source of (domestic) demand from non-Annex 1 countries;
- There is interest in moving directly towards the implementation of a domestic emissions trading system without multilateral incentive mechanisms;
- A number of countries are opting for a carbon tax;
- In the absence of an NMM, many countries are focusing on the more advanced support vehicles of multilateral climate policy, where NAMAs play a prominent role.

The currently only abstract possibility of an NMM, under an uncertain post-2020 architecture with uncertain levels of demand for carbon credits is not likely to play a driving transitional role for mitigation efforts in the short or medium term. Indeed, given the current lack of demand and multilateral guidance regarding such new mechanisms, the window of opportunity for a seamless transition from the CDM to a more ambitious NMM may close. In the meantime, many countries are taking meaningful bottom-up action instead. For many countries, the capacity and expertise acquired through the CDM continues to provide a basis not only for the remaining current pipeline, but also for continuing other market-based and non-market based measures in the form of emissions trading, taxes, domestic offsetting and particularly NAMAs. Such measures are not mutually exclusive, but their co-existence will increase the need for some kind of mechanism to help serve as a global MRV and accounting system not least for countries, or groups of countries, which may wish to take a collaborative approach to emission reduction.

While it is a positive signal that a number of countries are independently taking action and that support is being made available to support such action, it is clear that a multilateral approach would facilitate accountability and efficiency in global mitigation action, while a multitude of different national and regional approaches would increase the complexity and opacity of international climate policy, increasing the difficulty of international development and climate finance efforts. In negotiations to further define the NMM (especially the important issue of moving from offsetting to net mitigation) and in deciding what to do with the current institutional framework of the CDM, parties need to consider to what extent a top down approach is a viable solution, or how a broader approach allowing for centralized oversight, but also for bottom-up activities (as initially intended under the framework for various approaches (FVA)) can be reconciled to effectively drive mitigation in this increasingly “fragmented” world.

1. Background

Market-based mechanisms have become accepted tools of international climate policy for addressing the need to efficiently mitigate anthropogenic greenhouse gas (GHG) emissions on a large scale in order to meet the politically agreed target to limit global warming to less than 2°C compared to the preindustrial period. In this context, the focus of market mechanisms has been shifting away from project-based offsetting, as in the early Clean Development Mechanism (CDM) and Joint Implementation (JI) under the Kyoto Protocol. Upscaled and sector approaches have been introduced in the CDM through Programmes of Activities (PoA) and standardized baselines. Even larger levels of aggregation are likely to emerge under the New Market Mechanism (NMM) as negotiated in the context of the agreement under the UNFCCC negotiated under the Ad-hoc Group on the Durban Platform for Enhanced Action (ADP).¹ Though specifics are still far from being clear, a distinction is emerging between a top-down NMM, which may include one or several new market mechanisms under the UNFCCC, and the bottom-up Framework for Various Approaches (FVA), which could cover instruments that have evolved outside of the UNFCCC context. For instance, various developing countries and emerging economies are currently exploring opportunities for introducing domestic emissions trading schemes (ETS) outside the UNFCCC arena (e.g. under the World Bank's Partnership for Market Readiness, PMR). Approaches developed under the categories of NMM and FVA could become relevant pillars of the international climate policy regime in the post-2020. Mitigation policies in developing countries that are framed as Nationally Appropriate Mitigation Actions (NAMAs) could also comprise market based elements.

Current developments show that market based mechanisms will play a more and more important role in future climate policy, especially on the domestic level but also possibly internationally. New mechanisms do not need to be invented "from scratch", but can build on existing elements and know-how of established mechanisms, such as the CDM. The ongoing evolution of the CDM's regulatory framework and methodological toolkit shows that the CDM is becoming a laboratory for upscaling of market mechanisms.

Existing market mechanisms from the Kyoto era suffer from a massive loss of demand due to the world economic crisis, limitations imposed on parties who declined to join a second Kyoto commitment period to meet their pledges, restrictions on the use of credits in the EU ETS, and a general lack of ambition after 2012. The resulting crash in prices for emission credits has led to a tapering off of market and project activity for these instruments. This is likely to last at least until 2015, at which point (it is hoped that) increased international ambition from all major emitters and a clarified framework to achieve their individual pledges/contributions may be more clearly defined. The current crisis can however serve as a "window of opportunity" to design more effective future mechanisms.

¹ We use the term "2015 agreement" for this agreement due to the deadline to negotiate it prior to the end of 2015. The 2015 agreement is to define nationally determined mitigation "contributions" for all parties to the UNFCCC from 2020 onwards,

This paper is the synthesis of a larger research project conducted for the BMUB². It illustrates and discusses possibilities for the transition of mitigation action in developing countries, starting with the CDM and moving towards various forms of NMM, domestic Emissions Trading Schemes (ETS) or domestic Non-ETS solutions developed as NAMAs.

Due to the diversity of existing and proposed future market mechanisms, we initially provide an overview of the landscape of market mechanisms under the UNFCCC, before highlighting the distinction between such multilateral mechanisms and policy instruments which may be implemented on the domestic level (chapter 2). Based on this overview, chapter 3 discusses potential conceptual pathways for the transition from CDM towards future climate policy instruments. The conceptual approach of transition pathways has been applied to 10 countries: Chile, China, Colombia, Indonesia, Kazakhstan, Mexico, Peru, Thailand, Turkey and Vietnam. Chapter 4 summarizes the findings of the individual country cases. A reflection of the research findings is provided in chapter 5, while chapter 6 concludes the discussion.

² UfoPlan Vorhaben FKZ UM 12 41 158: Skizzierung eines schrittweisen Übergangs vom CDM zu Neuen Marktmechanismen und einem Emissionshandelssystem und des begleitenden Kapazitätsaufbaus.

2. Landscape of Mechanisms and Instruments

This chapter provides an overview of the landscape of market mechanisms under the UNFCCC, differentiated between multilateral mechanisms and instruments implemented on the domestic level.

2.1. Mapping of Mechanisms

The **Kyoto Protocol** established three market mechanisms: the Clean Development Mechanism (CDM), Joint Implementation (JI) and International Emissions Trading (IET). The CDM comprises project-based activities, and has been expanded to serve as an umbrella for aggregating numerous individual activities (Programme of Activities, PoA). In the context of the negotiations for the 2015 agreement under the UNFCCC, to take effect after 2020, a **New Market Mechanism** (NMM) was promoted primarily by the European Union (EU), the Environmental Integrity Group (EIG) and the Independent Association of Latin America and the Caribbean. The mechanism was established in 2011, when the Durban conference (COP17) defined a

“new market-based mechanism” (NMM), operating under the guidance and authority of the COP, to enhance the cost-effectiveness of, and to promote, mitigation actions, bearing in mind different circumstances of developed and developing countries [...] which may assist developed countries to meet part of their mitigation targets or commitments under the Convention” (UNFCCC 2011).

Since then, various parties and observers have submitted their views and positions on NMM design. COP-18 defined some characteristics for the NMM. It is to “deliver real, permanent, additional, and verified mitigation outcomes, avoid double counting of effort and achieve a net decrease and/or avoidance of greenhouse gas emissions” (UNFCCC 2012a&b), and include both project-based and sectoral approaches. Due to a stalling of negotiations since COP 18, the scope and structure of the NMM are still unclear, and likely to remain so in the near term. Current options for NMM design include variations of crediting and trading approaches (including the EU proposal for a sectoral mechanism), and potentially crediting of mitigation policies (“Nationally Appropriate Mitigation Action”, NAMAs). In addition, some countries proposed completely new mechanisms such as the net avoided emissions concept proposed by Ecuador.

A simultaneous development is the emergence of a “**Framework for Various Approaches**” (FVA), as agreed to at COP-18 and promoted by members of the Umbrella Group, notably the United States of America, Japan, and New Zealand to take account of bottom up mitigation efforts developed outside of the UNFCCC framework.

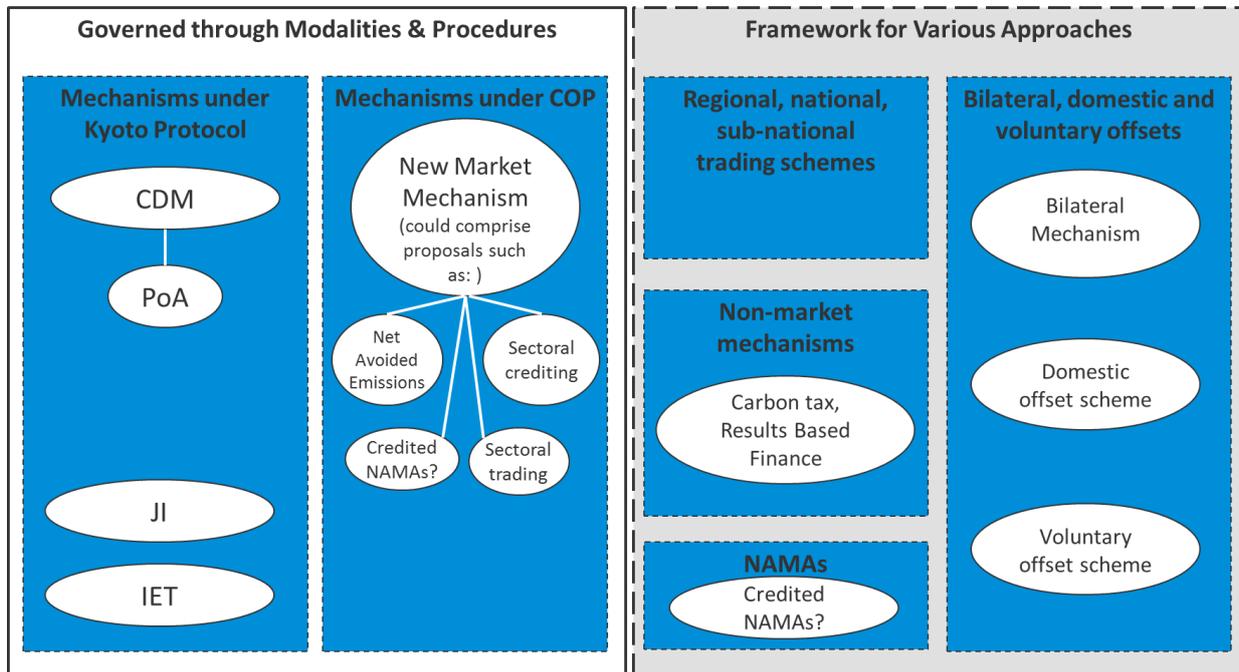
Indeed many countries are individually developing market-based mechanisms for mitigating their domestic GHG emissions without waiting for UNFCCC decisions. These activities include regional emissions trading schemes (such as the EU ETS, or North American schemes), domestic emissions trading schemes (with China “on the driver’s seat”, and further countries exploring opportunities

under the World Bank's Partnership for Market Readiness, PMR), bilateral offset schemes (Japan), domestic offset schemes (e.g. China, Mexico, Australia, California, Canadian provinces), and in the future, subject to political agreement, potentially credited elements of NAMAs. Due to the stalling of negotiations on new market mechanisms, it remains open whether the FVA is to be developed under UNFCCC authority and guidance like the Kyoto Mechanisms, or whether each country will simply report its mechanism design and activity pipeline to the UNFCCC. If the FVA is to be developed under the UNFCCC, a complete fragmentation of market mechanisms could be avoided through agreed guiding principles and criteria. Such coordination and oversight has the potential to serve as "glue", with the potential to eventually integrate different market-based instruments into a coherent global carbon market under a multilateral framework. Given the unwillingness of many countries to accept UNFCCC oversight of "their" market mechanisms, there is a considerable risk of increasing fragmentation and lack of transparency regarding crucial design elements which would then prevent to compare efforts.

Party positions on the FVA differ considerably, with the EU, the EIG, and AILAC advocating centralized governance and oversight under the auspices of the UNFCCC, while e.g. Japan, the USA and New Zealand favour a minimum set of common standards that allow for comparing various evolving bottom up activities (for a summary of the most recent submissions on the FVA, see Sterk, 2013). The former parties would require a high degree of environmental integrity in order to accept emission credits from the FVA as compliance tools for UNFCCC mitigation obligations, while the latter will likely not agree or submit to binding rules which they see as an infringement on their national policy prerogatives.

Crediting of GHG emission reductions under NAMAs ("NAMA crediting") has been highly contentious in the negotiations, but is unlikely to be rejected outright. It may either be accounted for directly under the NMM or under the FVA. Many proponents of Reducing Emissions from Deforestation and Forest Degradation (REDD+) would favour coverage under a market mechanism. So far negotiation decisions have restricted REDD+ to results-based financing. Due to substantial methodological peculiarities, even though it has become an important component of voluntary carbon markets, we do not consider REDD+ in this study. Figure 1 below illustrates this landscape of market mechanisms.

Figure 1: Mapping existing and future market mechanisms under the UNFCCC



Source: Perspectives GmbH, adapted from Koakutsu & Usui (2013)

2.2. Distinction of different levels: Mechanisms and Instruments

Navigating this landscape of existing and future mechanisms is complex, as the individual mechanisms operationalize some proposals on different levels and incentivize different actors. For mechanisms with high levels of aggregation, different country and sector-specific circumstances need to be taken into account.

Under the CDM and project-based mechanisms in general, incentives accrue to emitters. Programmatic approaches require incentives both for the programme coordinator and the project implementers. Some proposals for the NMM foresee incentives for governments that can choose any policy instruments on the domestic level to incentivize mitigation action by emitters, for example through regulation, carbon taxes or mandatory emission caps. We therefore distinguish between “mechanism” and mitigation policy “instrument” in the following chapters, as detailed below:

- **Mechanisms:** The term “mechanism” is applied here for mitigation schemes that provide a framework for generating emissions credits³ that are accepted on the international, multinational or bilateral level. These can be divided into three categories: The first category comprises mechanisms under the UNFCCC, such as the CDM, NMM or the FVA (where we call the latter two “future market mechanisms”). The second category refers to mechanisms that recognize credits by a country group, the third by a single country. Mechanisms typically establish an institutional framework for generating emission credits, a governing bod that

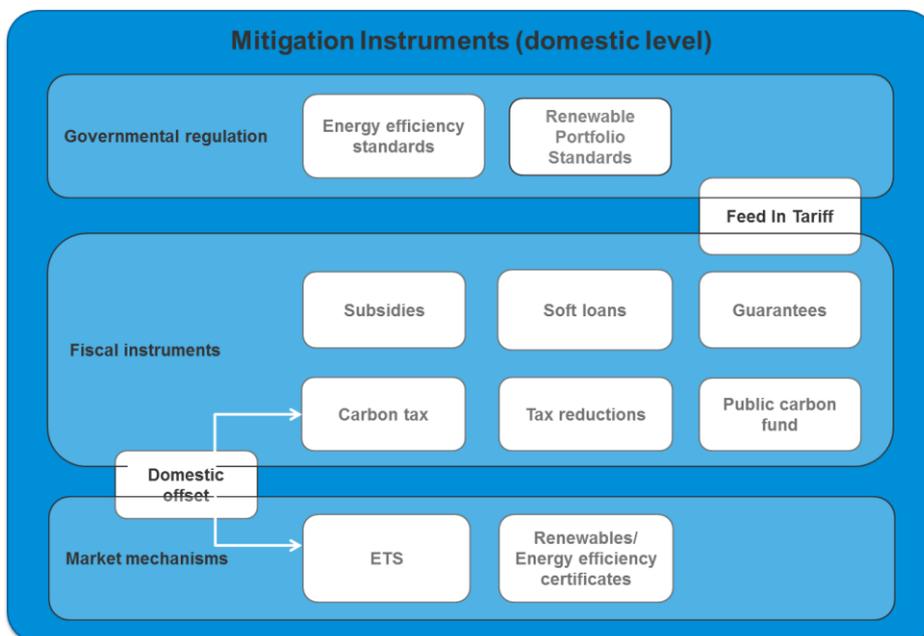
³ The term “emission credit” here includes any type of tradable unit, also allowances from trading schemes.

specifies rules for eligible activities and accounting for credits and their transfers but do not necessarily provide guidance regarding policy instruments to drive mitigation.

- **Instruments:** Instruments are designed to achieve domestic mitigation action at the emitter level. They are usually implemented at the macro-economic level but can also apply to the project-based level. Typically mitigation instruments can be differentiated into direct regulation, such as performance or efficiency standards, e.g. for buildings, transport or technical appliances, fiscal instruments like carbon taxes and mitigation subsidies. Market instruments include emission trading systems as well as certificates for commodities that lead to mitigation. There are hybrid instruments such as feed-in-tariffs that rely on direct regulation but also have a subsidy element. Perhaps the most direct transfer of the CDM’s conceptual elements can be traced to the trend in domestic offsetting activities. Financial and regulatory instruments may also be employed on a domestic level in order to incentivize acquisition of emission credits from mechanisms, e.g. through a CDM fund.

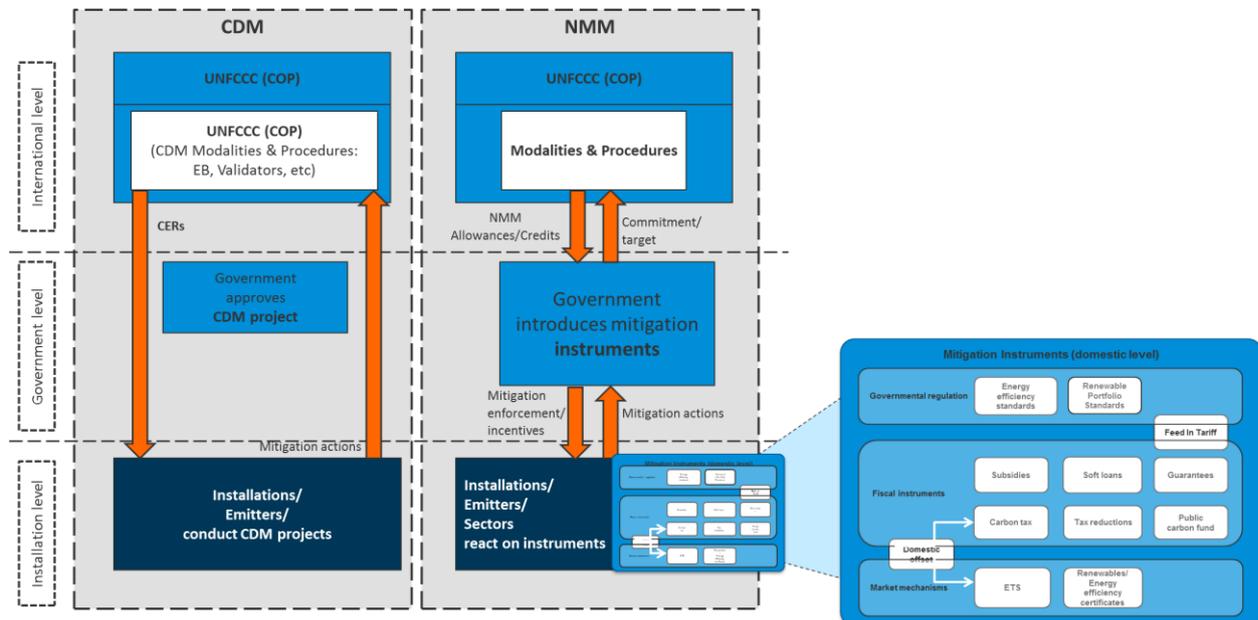
An illustrative list of instruments is provided in **Figure 2** below, while **Figure 3** illustrates the different layers of decision making under CDM and NMM.

Figure 2: Policy instruments under future market mechanisms (non-exhaustive)



Source: Perspectives GmbH

Figure 3: Different levels of decision making for mechanisms and instruments



Source: Perspectives GmbH

Importantly, the new role that domestic governments will likely play under the NMM and contrasting relationship between implementing actors when compared to the CDM raises new governance challenges. With the expanded role of national government policy making, there is an incentive for both NMM host country governments and implementers to inflate baselines, set unambitious caps etc. Although some proposals have been made, it is not yet clear, how monitoring, reporting, and verification (MRV) would be carried out and what role there may be for an independent regulatory body (such as the CDM Executive Board) to play in order to ensure the integrity of such mechanisms on an international level. This illustrates the relevance the principles, modalities and procedures that underpin the institutional design of emerging mechanisms such as the NMM. In order to illustrate the distinction between mechanism and instruments, we compare measures towards a fictitious Greenfield low carbon city in a host country, under the CDM and the NMM (Textbox 1).

Textbox 1: Illustrative comparison of CDM and NMM measures in a fictitious city

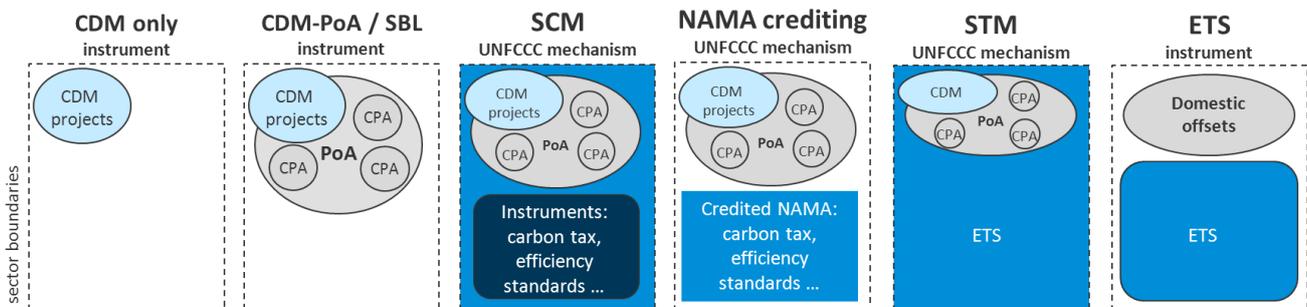
Under the CDM (mechanism), various actors such as the municipality, investors, technology providers, and real estate owner can submit a CDM project in order to tap an additional revenue stream from CER sales which allows the project to become viable. They can apply CDM methodology AM0091 (Energy efficiency technologies and fuel switching in new buildings), and set up the CDM project according to the CDM modalities and procedures. The project participants could be non-state actors such as private sector companies or civil society organizations which can initiate mitigation actions at the emitters' level, and the CDM framework directly provides incentives from the international level. The host country government is only involved in approving the project, and in conventional sector-specific regulation that exists independently of the mitigation aspects, but does not need to enforce implementation or provide incentives.

Under the NMM, the host country government has a more active role. Here, the mechanism on the international level (the NMM) would provide financial incentives directly to the government for reducing GHG emissions in a certain sector (here the building sector). Only if the country (i.e. the government) manages to reduce emissions in the respective sector, an international NMM oversight body would reward the government (e.g. with NMM credits). The government will therefore incentivize or enforce actors at the emitters' level to bring down GHG emissions. For instance, a government could introduce an energy efficiency code for new buildings (the instrument). The planners of that city would need to comply with the code. It is left to the government's decision how it provides positive incentives (equivalent to the CER sales under the CDM) to the emitters' level.

3. Pathways for the Transition of Mechanisms

We subsequently discuss general transformation options for CDM activities, and identify potential pathways for the transition of mechanisms. Figure 4 is a simplified depiction of different sectoral coverage of the various mechanisms, with areas covered by mechanisms shown in (various) colours. While under the project-based CDM a smaller part of a sector is covered by individual activities, a CDM that relies heavily on PoAs- and/or SBs- allows for covering a larger share of GHG emitting activities. Under the SCM, domestic mitigation instruments cover a large share of emissions. NAMA crediting would also rely primarily on instruments. An STM covers the whole sector, while under an ETS, only part of the sector is covered.⁴ CDM activities can be kept separate or be integrated under all mechanisms.

Figure 4: Different Sectoral Coverage of Mechanisms



Source: Perspectives GmbH

3.1. General transition options for CDM activities

Before elaborating schematic pathways for evolution of CDM activities, we discuss general aspects of further developing CDM activities. Here, one generally needs to distinguish between i) integration of CDM activities⁵ into national mitigation instruments under a future mechanism, and ii) continuation of CDM activities outside such a mechanism. While the former allows for the transformation and evolution of CDM activities, the latter retains the current offsetting approach along the lines of international and domestic offsetting (both of which can be linked with national instruments). The following options allow for the integration of CDM activities into national mitigation instruments under a future support scheme:

a) Transition of CDM activities into a national mitigation instrument:

CDM projects/PoAs could be up-scaled into NMM / NAMA instruments, and thus become the foundation of a future support scheme activity. This could for instance be a PoA that is adjusted

⁴ ETS often apply a “de minimis” approach and do exclude certain installations below a minimum threshold (e.g. annual GHG emissions) as the transaction costs for such installations under an ETS would be too high. Depending on the instrument a government applies on the domestic level, under a STM such a minimum threshold could apply as well.

⁵ This term includes projects as well as PoAs.

in a way where its Component Project Activities (CPAs) would cover the entire emitting sector (or NMM activities' scope). This would most likely require that a public regulator assumes a similar role than a Coordinating and Managing Entity (CME), which is currently responsible for a PoA.

b) Integration of existing CDM activities into the NMM / NAMA boundary

If existing CDM activities are to be covered by a future mechanism, they need to be in compliance with the political objectives and technical requirements of that mechanism. For the NMM this means, achieving net emission reductions, covering a broad segment of the economy, satisfying demands for environmental integrity, and not allowing double counting. Net emission reductions through the CDM could be achieved by discounting, retiring of credits or introducing more ambitious baselines, or establishing both business-as-usual baselines and more ambitious crediting thresholds⁶ (see e.g. Schneider & Cames 2009, Michaelowa et al. 2010). The environmental integrity of CDM activities can be addressed and safeguarded by carefully incorporating elements of the CDM project cycle such as using approved (CDM) methodologies, requiring third party assessments and through centralized governance structure scrutiny. Double counting can be avoided through a robust accounting framework, which would cover all relevant reduction activities within the NMM's scope that are recorded in a domestic registry, linked with an international UNFCCC-operated NMM registry. CDM activities may continue under the UNFCCC's CDM, but would need to provide net emission reductions.

c) Co-existence of CDM activities with national policies and measures under the NMM / NAMA

Under this scenario, CDM activities would no longer be overseen by the UNFCCC, but would transition into domestic offsetting activities. This situation is most likely when a domestic ETS (potentially under a sectoral trading mechanism, (STM)) or a NAMA is introduced, and industry lobbies may demand for flexibility in meeting their compliance, e.g. by allowing the supplementary use of offset credits as a safeguard against overly stringent NMM thresholds. Here, the host country government would need to develop the necessary capacity and ensure that a credible framework for issuing and verifying emission reductions is in place, and that net emissions reductions are achieved as described above. Close collaboration and communication of activity level information between UNFCCC and the domestic regulator would be needed, and safeguards to prevent the approval of baselines with weak environmental integrity and over-issuance of credits.

The government could also allow for CDM-like domestic offsetting activities (as in the case of the Chinese CDM), where former CDM activities would be integrated into a domestic climate policy framework as a domestic flexible mechanism. Under such a scenario, the CDM could complement the establishment of domestic ETS through measures outside the envisaged ETS sectors. Moreover,

⁶ The difference between BAU and the more ambitious baselines will not be credited, but allows measuring the net mitigation impact more transparently than a stand-alone ambitious baseline.

if the NMM builds closely on the CDM's methodological toolkit and regulatory framework, this could save time, investment and valuable know-how in the development and implementation of the NMM.

In this light, under option a) and b) the CDM project owners/developers (from CP1) would risk losing any existing revenue streams from CER sales that occur when conducting the activity under the CDM. Therefore, CDM project developers/owners would need to be given an alternative incentive to replace any revenue which may have come from the sale of CERs. Baron et al. (2009) suggest including a “sunset clause” when introducing the domestic regulatory framework for new mechanisms. For instance, one could allow CDM activities to fulfil their current crediting period (or a grace period of e.g. 5 years), but require a transition to the new mechanism afterwards. This would allow for a continuous expansion of the new mechanism boundary within the respective sector (and a concurrent decline of the CDM's scope over time).

The continuation of CDM activities outside the scope of future mechanisms is explored under the following scenario:

d) Continuation of CDM activities outside the NMM / NAMA boundary

For continuation of CDM activities with distinct crediting and not matching them with any future support mechanism, one would need to ensure that the respective CDM activities do not overlap with the support scheme or national instruments. In other words, the boundaries for both CDM activities and NMM / NAMA action need to be clear and distinct. In this case one could continue CDM activities and introduce the NMM, in the same sector or industry, provided eligibility conditions are met. Determining baselines and additionality of NMM or NAMA action should consider CDM activities (see Spalding-Fecher 2013). Distinguishing between the CDM and NMM, the regulatory process of these mechanisms could also be separated. However, two different regulators and processes might lead to the overregulation of one or both of these mechanisms, as well as fragmentation and resulting high transaction costs.

An important aspect when considering the role of existing CDM activities under future mechanisms is the nature to emission reductions under the CDM, i.e. whether or not the reduction can be reversed if the project no longer receives credits. If the emission reduction originates from an irreversible measure (for example energy efficiency upgrade of an industrial facility), the future treatment of this CDM activity is limited to reflecting it in the baseline determination within the scope of future schemes. If on the other hand, the emission reduction can be reversed or start emitting again (for example landfill methane capture), it also needs to be reflected in the baseline scenario, but also needs to be taken into account when included in the scope of the future scheme.

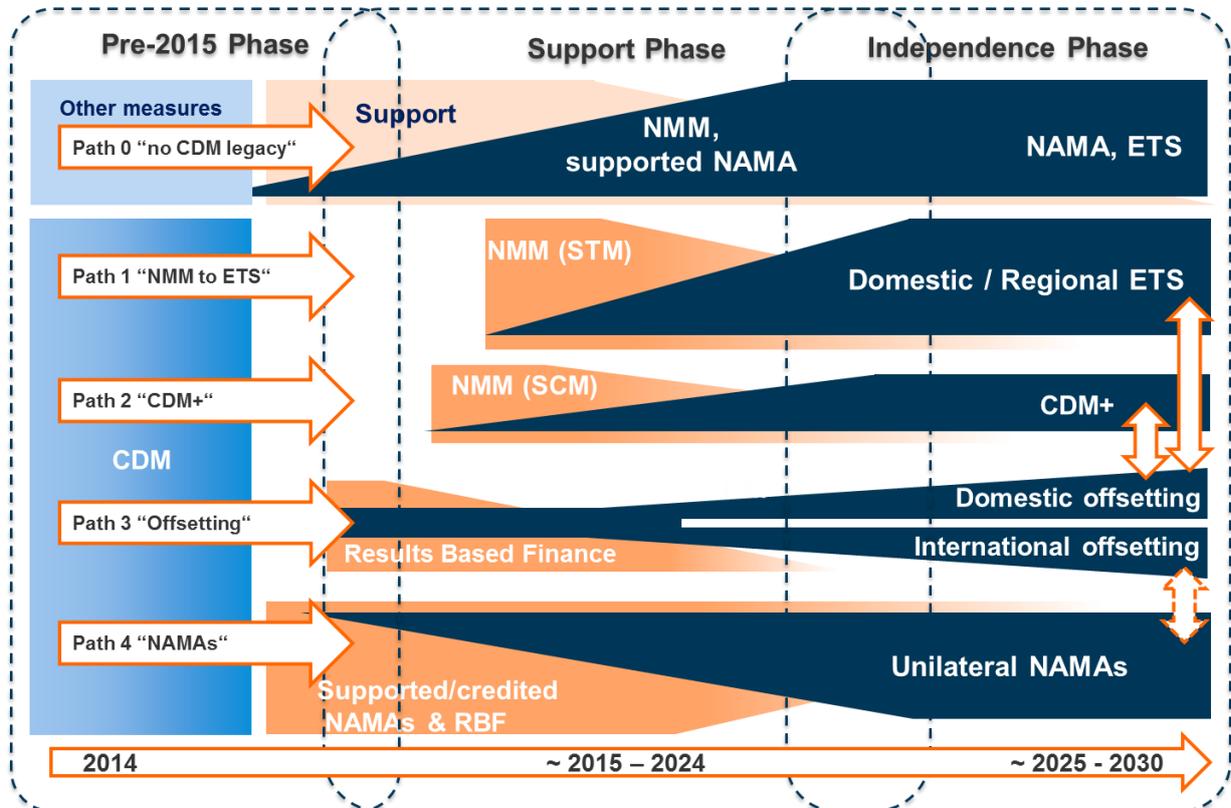
For countries with little or no CDM experience (such as Turkey), this discussion also needs to consider a scenario where the country cannot build upon an established CDM infrastructure and portfolio.

3.2. Identifying ideal-types of suitable transition pathways

Based on this discussion, we derive the following possible transition options (“pathways”) from the CDM to future mechanisms (such as the NMM or supported NAMAs), and from there to independent domestic instruments, e.g. under unilateral NAMAs (depicted in Figure 5). Those are “ideal-types” and certainly cannot be translated into reality directly, though they may serve as indications for the potential evolution of the CDM:

- **Pathway 0 “Towards NMM, NAMAs and ETS in countries without CDM legacy”:** Implementing future mechanisms in countries that cannot build upon CDM experience.
- **Pathway 1 “CDM to NMM and to ETS”:** Absorbing CDM activities into a STM (NMM), with the ultimate goal of establishing a domestic ETS.
- **Pathway 2 “Expanded CDM with net mitigation benefits (CDM+)”:** Upscaling CDM activities to sectoral level with additional atmospheric benefits.
- **Pathway 3 “Continued CDM as offsetting vehicle”:** Continuation of CDM, potentially transitioning to domestic offsetting while maintaining a prominent role for international offsetting.
- **Pathway 4 “Transformation of CDM activities into instruments under a NAMA”:** Integrating CDM activities into a supported/credited NAMA, with the ultimate goal of continuing those activities without support/credit revenues.

Figure 5: Potential Pathways for Transition of Mechanisms



Source: Perspectives GmbH

3.2.1. Pathway 0: Towards NMM, NAMAs and ETS in countries w/o CDM legacy

This pathway is an option for countries that have little or no experience with the CDM and would therefore have to start from scratch. This is the case of Turkey or Kazakhstan, due to their status under the UNFCCC/Kyoto Protocol. Despite their lack of CDM experience, these countries may still be interested in using market based instruments as part of their mitigation efforts. Such efforts may take form in the implementation of an NMM, a domestic ETS, or NAMA-labelled domestic policy measure. Such countries may be able to draw on other experience with market based policies (e.g. voluntary markets) or existing structures (e.g. for MRV) in implementing future market based measures. Temporary support may be provided through either NMM (STM) or supported/credited NAMAs. While the establishment of ETS and NAMAs could be included in Pathways 1 and 4, we still see it as important to elaborate on a distinct path for non-CDM countries as the ultimate outcome might be shaped by the absence of established flexible mechanism capacity.

Implementing an NMM or an ETS may require considerable capacity building and international support, e.g. under the PMR or later through an STM. Developing non-ETS instruments may also require support, and can focus on supported NAMAs, or SCM under the NMM.

3.2.2. Pathway 1: CDM to NMM (STM) and ETS

This pathway explores the inclusion of CDM activities into other measures which may later be covered by an ETS. Thus, it describes an evolution of CDM activities towards emissions trading, by utilizing revenues from a STM. An ETS can adequately address GHG emissions on a sector or economy scale – if designed properly, while the NMM is thought as an incentivizing scheme for host country governments.

For this ideal-type it is assumed that the future ETS sectors already face some sort of regulation pre-2015 that addresses their GHG emissions levels at least to some extent. This could for instance be performance standards, or electricity taxes. Such measures would provide signals towards a more efficient behaviour, with the side benefit of GHG reduction effects. Besides those measures there are some facilities within the sectors that have achieved emission reductions with support of the CDM. For achieving a much broader coverage with more ambitious GHG mitigation effects an ETS shall be phased in gradually. During the pre-2015 phase the preparation of the ETS takes place, with support from e.g. the World Bank's Partnership for Market Readiness (PMR). From 2015 onwards, a pilot phase of the ETS shall commence. During this support phase the host country would set up a STM, which could eventually lead to a domestic ETS. It requires the host country government to meet certain sectoral mitigation goals, and hence provides incentives for the government to enforce mitigation action within the sector – for which the host country has identified an ETS as the proper instrument. Over time the STM will cover more and more of the sectors' emissions, by i) gradually incorporating the CDM facilities and by ii) increasing ambition over time. The incorporation of CDM activities means that the facilities which already achieve GHG emission reductions under the CDM are covered by the STM scope. As discussed above, those reductions will either be reflected in the baseline, or the issuance of credits needs to be phased out over time / exchanged into STM allowances. Hence, after a few years no CERs will flow inside the STM scope anymore. Meanwhile the STM will be opened for the supplementary use of offset credits, as a safety valve for increasing allowance prices inside the ETS. In this example the ETS regulator allows for domestic offsetting, which means that credits originating from domestic mitigation action outside the sector may be used for compliance. Note that those domestic offset projects may be former or existing CDM projects from sectors which are not covered by the STM.

3.2.3. Pathway 2: Expanded CDM with net mitigation benefits (CDM+)

This pathway covers CDM activities with the ultimate goal of upscaling CDM activities towards a sectoral scope with greater atmospheric benefits, i.e. net emission reductions. The host country government is free to introduce any kind of instrument or measure for reducing GHG emissions in the respective sector, but it can (and should) build upon the mitigation structure established with support of the CDM (i.e. upon the CDM activities). Temporary support is anticipated through the NMM in form of a Sectoral Crediting Mechanism (SCM).

For this ideal-type we assume that it is suitable for a settings that mainly represents small emitters - and thus is not appropriate for an ETS already pre-2015. Those emitters are subject to some environmental regulation with GHG reduction effects (e.g. voluntary energy efficiency standards). Besides this, some CDM activities are in place (projects, Programme of Activities (PoA) as well as standardized baselines (SBs)), while also some emissions may remain unregulated. For achieving a much broader coverage with more ambitious GHG mitigation effects, the host country government envisages introducing a comprehensive set of mitigation instruments. Depending on the cost structure, some instruments do not require external support, while more ambitious ones do. For obtaining this support, from 2015 onwards a SCM shall be introduced. Here, the host country government receives SCM credits for reducing sectoral emissions below a baseline. The baseline is below BAU (reductions between BAU and baseline are own contributions), while all emission reductions below the baseline are considered “ambitious”, and therefore will be credited. Assuming that the baseline calculation is robust and conservative the more ambitious reductions will lead to net emission reductions. With the introduction of the SCM a large step towards a broad regulation of sectoral emissions is envisaged, meaning that a larger set of moderate and ambitious mitigation measures shall be implemented.

Over time, more and more instruments shall be implemented in an ambitious fashion, while the share of unregulated emissions will decline to zero over the next two decades. Existing CDM activities can either be accounted towards the SCM reduction (which is likely), or remain outside the SCM scope and can continue generating credits until the end of their crediting periods. Incorporating CDM activities into the SCM means that the facilities/emitters that already achieve GHG emission reductions under the CDM must from 2015 onwards be reflected in the baseline scenario, and to be phased out over time (see above). After a few years no CERs shall flow inside the SCM scope anymore, and eventually the SCM can be phased out itself, as the host country is now able to apply ambitious instruments without external support.

3.2.4. Pathway 3: Continued CDM as offsetting vehicle

This pathway describes the continuation and evolution of CDM activities, potentially shifting to domestic offsetting and still playing a prominent role for international offsetting. It is assumed that the host country government is not introducing ambitious instruments in the respective sector, as the country is a low-income country. It could also be the case that the sector has a strong lobby and thus no instruments are introduced despite the country already having a relatively high income. However, there might be other sectors that foresee emission reduction through domestic regulatory or carbon pricing instruments, and might utilize domestic offsets to allow for flexibility in achieving compliance. Temporary support is anticipated through CER procurement or results-based finance vehicles, to some extent the UNFCCC’s CDM Loan Scheme or other climate finance mechanisms.

For this ideal-type it is assumed that in the respective sector pre-2015 CDM activities are in place (projects, PoAs as well as SBs), while a large share of emissions remain unregulated. Over time, i.e.

after 2015, the CDM portfolio remains in place and may even grow. In the absence of a working market (i.e. essentially since 2011 until after 2015) artificial demand through procurement vehicles serves as support. Depending on mitigation activities in other sectors within the host country, domestic offsetting may be allowed. In that case certain CDM activities could be transferred into domestic offsetting activities. Another option is the voluntary offset market which could also take over some of the CDM's share.

3.2.5. Pathway 4: Transformation of CDM activities into instruments under a NAMA

This pathway integrates CDM activities as into a supported/credited NAMA scheme, with the ultimate goal of instruments being financed independently without support as a unilateral NAMA. The host country government is free to introduce any kind of instrument or measure for reducing GHG emissions in the respective sector, but of course it can (and should) build upon the mitigation structure established with support of the CDM (i.e. upon the CDM activities). Temporary support is anticipated through supported or credited NAMAs⁷. This may allow to combine strengths of market-based (performance-based nature and high level of accuracy), and non-market instruments (e.g. providing up-front support), and allow a broader range of financial and regulatory instruments to support more targeted mitigation action.

For this ideal-type it is assumed that the emissions in a sector appropriate for non-ETS instruments are subject to some environmental regulation with GHG reduction effects (e.g. voluntary energy efficiency standards) already pre-2015. Besides this, CDM activities are in place (projects, PoAs as well as SBs), while supported NAMAs are under development. After 2015, NAMA crediting is introduced to supplement the support. Over time more and more instruments may be financed exclusively domestically (unilateral NAMAs). Existing CDM activities can either be accounted under the supported or credited NAMA, or remain outside the NAMA scope and can continue generating credits until the end of their crediting periods. The attractiveness depends on the ratio of support to potential CER revenue per mitigation unit. Incorporating CDM activities into the NAMA means that the facilities/emitters that already achieve GHG emission reductions under the CDM must from 2015 onwards be reflected in the NAMA baseline scenario, and to be phased out over time (see above). After a few years no CERs shall flow inside the NAMA scope anymore.

⁷ Credited NAMAs could either be a combination of policies with market based instruments (such as CDM PoA), or a direct crediting of national policies. The latter would require a robust GHG inventory, accounting framework and MRV scheme.

4. Evaluation of selected countries

In this section, we develop 10 country profiles (Chile, China, Colombia, Indonesia, Kazakhstan, Mexico, Peru, Thailand, Turkey, Vietnam) that analyse the respective country context, existing climate policies and market based measures, barriers, and the country's plans and possible existing measures towards the introduction of market based instruments. Through this analysis we provide further insights on possible transition pathways, barriers and how to potentially overcome them through targeted support measures. Our analysis is guided by key questions such as how far developed existing instruments and measures for carbon emission reductions in the country have been; what the existing interrelations and overlaps between instruments have been or what existing experiences, capacities and structures can be used for the introduction of more ambitious market-based activities? Based on this analysis we describe which the potential transition pathways for the respective countries are.

4.1. Chile

Though a Non-Annex 1 Country, for the past 20 years, Chile has an expanding middle class and a healthy though heavily fossil fuel dependent growing economy with corresponding rapid growth in greenhouse gas (GHG) emissions. After economic reforms in the 1970's and 1980's moving towards privatization and market oriented policies, Chile transitioned to a Presidential democracy in 1990 after the 16-year military rule of Augusto Pinochet. A member of the Organization for Economic Co-operation and Development (OECD) since 2010, it has experience with market instruments for water resources, fisheries, and air pollution.

As part of the Copenhagen Accord, Chile announced nationally appropriate mitigation actions (NAMA) to achieve a 20% deviation below the "Business as Usual" emissions growth trajectory by 2020, as projected from year 2007. Active in the CDM and NAMA development and a member of the World Bank's Partnership for Market Readiness (PMR), Chile passed legislation for a carbon tax in September 2014, possibly as a precursor to a domestic emissions trading system in the medium to long term future.

Governance and public administration are strong with comparative capacity for environmental policy implementation to other OECD countries. Ministry of the Environment and the Ministry of Energy are the two ministries responsible for climate issues. Chile has been active developing its Mitigation Action Plans & Scenarios (MAPS Chile), with various scenario projections for emissions growth under BAU and variations thereupon. It has also been active in the Low Emission Capacity Building Programme of the European Union (European Commission and Member States) and the United Nations Development Program.

Chile is exploring the option of an ETS and has already carried out preliminary feasibility studies and scoping. The country has the basics for the development of an ETS including the institutional and economic foundations, functioning private sector and regulatory framework. The OECD notes that "Chile was a pioneer in the use of trading mechanisms such as tradable particulate emission permits

in Santiago, nationwide trading of water rights and individual transferable quotas for some fish species". An implementing country under the World Bank's PMR, Chile is engaged nationally and internationally in efforts to build capacity for market instruments for emission mitigation.

With a generally advanced market economy, the most significant market barrier to introducing market based mechanisms is the oligopolistic structure of the energy sector which creates significant barriers to entry for outside parties and the drastic spot electricity market fluctuations which increase risk for investors.

Following Michelle Bachelet's presidential electoral victory in March 2014, climate and energy policies may take more precedence in Chilean politics. Indeed this is already evident with recent energy reforms, which focus on renewables and a reform of the electricity grid, and a new carbon tax. Ms. Bachelet will likely continue to be more aggressive on climate policy in keeping with her former track record on environmental issues including campaigning partially on environmental issues in her first run for President in 2005.

Although none of the suggested pathways fit Chile perfectly, Pathway 4 could apply. With the multitude of NAMAs that Chile is developing, a number of CDM activities will fall into this realm. Chile benefits from international support for a number of these schemes, though they also demonstrate a significant amount of Chilean initiative and are somewhat domestically funded. With the exception of one NAMA in the forestry sector, which plans to produce offset credits for the voluntary market, there is no current plan to develop credited NAMAs. The most recent policy development of a carbon tax, for which legislation was passed in September 2014, is an ambitious measure outside the realm of credible mechanisms in its current form. Among the various countries examined, Chile is probably the best prepared in terms of institutional infrastructure and capacity to continue to develop continuously ambitious climate policy, even without significant international support. Emissions trading is still a policy option in the medium to long term (after 2020).

4.2. China

China is not only the most populous country on earth; it is first in a number of other respects. When measured by purchasing power parity, the Chinese economy may become the world's largest this year. In terms of climate and energy, it is the world's largest emitter with almost 30% of the world's emissions, Chinese emissions growth is also the world's largest making its positioning in climate negotiations and action vital to the success of any efforts to address climate change.

Under various leaders, various policy themes have been promoted including "Xiao Kang Society" under Deng Xiaoping, "scientific development" under Hu Jintao, and more recently "the Chinese Dream" under Xi Jinping - each of them drawing on Confucian principles of moderation, sustainability, resource conservation, growth and prosperity. Used differently in different policy contexts it can also be a general rhetorical approach to government policy when it comes to the environment, climate, and energy. Increased policy action in this area is essential as China has reached its environmental limits. Worsening local air pollution, which contributed to an estimated 1.2 million premature deaths in 2010, soil, water, and climate pollution levels are all testing tolerance levels.

The feat to control Chinese emissions is huge, but the policy apparatus is engaged in addressing the

issue. China is now not only the world's largest exporter of renewable energy technology; it is also the world's largest investor in the field. Many other measures to improve local air quality will also curb carbon dioxide emissions.

Within its policy mix, China is also increasingly moving to implement market based instruments in its energy and climate policy planning. Improved energy intensity goals were likely met under the 11th Five Year Plan (FYP) from 2006 to 2010, however command and control policies have exhausted much low hanging fruit, sometimes with mixed side effects on growth and production. This approach has been altered under the 12th FYP moving more towards flexible market measures.

Originally sceptical of the CDM, China later embraced the mechanism and moved to developed projects en masse becoming by far the world's leading CDM host country. With recent problems in CDM market, China has an interest in finding a way to drive demand for its projects and transition from the CDM to a domestic offset scheme. China has engaged as an implementing partner of the World Bank's Partnership for Market Readiness which is helping to study policy measures for emissions trading. The country has seven pilot emissions trading schemes, five of which started in 2013, a further two started in 2014, and other provinces expressed interests in the possibility of joining existing schemes. In 2016, during the 13th FYP, the Chinese government has the launch of a national emissions trading scheme. It is likely that a complete new scheme will be implemented incorporating what were deemed to be successful measures, rather than through linking existing schemes. Depending on coverage, China would likely be world's largest ETS.

Implementation of emissions trading on the national level will not be without challenges including a weak track record with regard to effective environmental policy implementation, the sheer growth of the economy and rate of urbanization. Internal power structures and conflicts between ministries, other agencies of government, and quasi-ministerial state owned enterprises are also major hurdles. In terms of economic barriers, despite an increased shift towards market economics, prices for many commodities, notably electricity, in China are fixed. Power producers, often State-Owned Enterprises with influence in the Communist Party similar to Ministries and other government agencies can then not pass on the additional cost to consumers.

In order to succeed with the implementation of an effective national emissions trading scheme, China will need to not only massively expand capacity for MRV issues, but also confront issues of corruption, government policy coordination, and work on issues of transparency to build trust in the nascent market. The fact that climate change is a competence of the NDRC and not of the comparatively weak Environment Ministry may be a promising sign that implementation of climate change efforts may have higher priority and be more effectively implemented.

China has already made it clear that a national emissions trading system will be introduced in 2016. Some CDM projects already fall under the purview of existing pilot schemes others will be integrated into the new domestic Chinese offsetting scheme of CCERs. With regard to those projects integrated into the scope of an ETS this is partially the case: There are supply side energy efficiency projects in Guangdong, Shanghai, and Beijing which are now covered by these jurisdictions' ETS pilot schemes. This is a form of what the project has identified as "Pathway 1: Absorbing CDM activities into a STM (NMM), with the ultimate goal of establishing a domestic ETS", though no Sectoral Trading or New

Market Mechanism is involved. The existing stock of CDM projects is also be integrated as a source for domestic offsetting, which the project has identified as “Pathway 3: Continued CDM as offsetting vehicle”. This pathway describes the continuation and evolution of CDM activities, shifting to domestic offsetting. In contrast to these theoretical pathways, China has decided to implement “ambitious climate mitigation measures” including in the form of a compulsory emissions trading system without any involvement from a multilateral instrument to aid transition. While some companies in China were active with CDM projects and development, the massive expansion of carbon trading to include many more sectors of the economy and making them understand, participate, and comply with the new ETS is a huge challenge for which the CDM only laid a very limited basis. These pathways are therefore only partially applicable to the case of China.

4.3. Colombia

As an emerging market, Colombia has recognized the urgency to embark on a green development path and has actively pursued mitigation options. GHG emissions show a steady increase since 1990 and are principally due to the growth of the country (emissions from industrial processes grew 90 %). Almost half of Colombia’s GHG emissions stem from the energy sector. Colombia is a net power exporter and mainly provides electricity to Ecuador, whereas imports (generally from Venezuela and Ecuador) make up only a very small amount from total electricity generation. Today, the majority of Colombian electricity is produced by hydropower and thermal power.

The country generally enjoys good institutional infrastructure and has developed a comprehensive set of action plans under its Low Carbon Development Strategy (LCDS). Colombia is actively engaging in the UNFCCC negotiations on - and is testing - international climate policy instruments to support their agenda. Here the focus currently is on NAMAs; the country has “lighthouse” (pilot) NAMA activities in the transport sector that complement previous CDM activities. The Colombian government is responsible for the identification of two types of NAMAs; early-implementation NAMAs and long-term NAMAs resulting from the LCDS. Thus, simultaneously to the creation of the LCDS based NAMAs the government is working on the compilation and promotion of a NAMA portfolio identified by the public and private sector. The government is highly interested in a more robust NAMA design and considers putting forward a national NAMA registry.

Also, the country is open to market and non-market vehicles. Colombia promotes the use of carbon markets as a mitigation mechanism, both domestically and internationally, as demonstrated by the government’s very active role in promoting and supporting CDM activities. The CDM is regarded as an important first experience both with a number of methodologies and with international climate finance, which in some cases has paved the way to NAMA development. There is however need for support and collaboration on the technical level not only to further develop NAMAs and other mitigation efforts, but also to avoid the loss of some CDM activities such as landfill methane capture.

Besides the CDM, Colombia is “testing” the voluntary carbon market, as well as exploring opportunities to use markets under the World Bank’s Partnership for Market Readiness. Beyond the domestic level, Colombia has been active in advocating the role of market mechanisms under the UNFCCC negotiations over the past years. However, the NMM is regarded an empty shell, in case it

is gaining relevance, Colombia is eager to test this vehicle as well. With regards to the pathways developed under this project, the country qualifies for the transition from CDM towards future instruments potentially towards offsetting (P3) and NAMAs (P4).

4.4. Indonesia

The climate change profile of Indonesia can be characterized by both high levels of emissions of greenhouse gases, placing the country at third among the top ten emitting nations worldwide as well as being strongly negatively affected by the impacts of climate change. According to the second national communication published in 2009, GHG emissions amounted to 1.79 Gt CO₂e in the year 2005. The major share of emissions is coming from land use change and forestry, followed by energy, peat fire related emissions, waste, agriculture and industry.

Since the COP in Bali, the Government of Indonesia (GoI) has taken an ambitious position in climate change mitigation and is one of the forerunners when it comes to the development of NAMAs. These efforts cannot be based on a strong CDM legacy. CDM record of the country is, compared to other countries, only limited. GoI announced nationally appropriate mitigation actions (NAMA) to achieve a 26% deviation below the “Business as Usual” emissions growth trajectory by 2020. With international support the reduction should be 41% respectively.

In 2011, to fulfil its ambitious GHG emissions reduction commitment, the Government of Indonesia (GoI) issued the National Action Plan for Greenhouse Gas Reduction (RAN-GRK) and a Regional Action Plan for Greenhouse Gas Emissions Reduction (RAD-GRK) for province level. Both action plans are “work plan documents for the implementation of various activities both directly and indirectly to reduce GHG emissions in accordance with the national development targets” according to the President of the Republic of Indonesia, 2011). The Ministry of the Environment and the Ministry for Planning (BAPPENAS) has been actively developing the mitigation framework as well as scenarios, with various scenario projections for emissions growth under BAU.

RAN-GRK covers five national sectors (agriculture, forestry and peat land, energy and transportation, industry and waste management) while RAD-GRK enables the application of the regulations in Provinces. By the end of 2013, all 33 provinces have submitted their local mitigation action plans to the RAN-GRK Secretariat. In addition, GoI published its framework for Nationally Appropriate Mitigation Activities in November 2013 and formulated six basic national criteria for NAMAs to guide the overall national process. Based on this efforts, there are six NAMAs that are currently under preparation and also seeking for international support three of which are at a more advanced stage: The Sustainable Urban Transport Program NAMA (SUTRI NAMA) led by the Ministry of Transportation has been registered under UNFCCC and also applied successfully for support by the NAMA Facility. The GoI also submitted for international support the Smart Street Lighting Initiative NAMA (SSLI NAMA) by the Ministry of Energy and Mineral Resources as well as the Vertically Integrated Municipal Solid Waste NAMA (VIMSWa NAMA) by the Ministry of Public Work. In addition, there are three NAMAs proposal in the proposal preparation stage focusing on financing Least Cost

Renewables in Indonesia (DEEP NAMA; Ministry of Energy and Mineral Resources); on using wood biomass based energy (CFFBE NAMA, Ministry of Forestry and Community Leader) as well as encouraging waste to energy (Cement NAMA, Ministry of Industry).

These efforts are part of the unilateral and supported stages of the NAMA process. Indonesia is not actively exploring the option of credited NAMA or, more broadly, a national emission trading system. However, with the Nusantara Carbon Scheme (NCS) the Gol is considering a voluntary carbon scheme. NCS is a domestic voluntary GHG reduction certification and registration scheme based on SNI ISO 14064/14065. So far, six methodologies on RE, EE, A/R, Waste, are under review and first pilot project are planned. The main objectives of NCS are to provide GHG offset to interested parties, raise market awareness, and encourage local capacity improvement in carbon management.

An implementing country under the World Bank's PMR, Indonesia is engaged nationally and internationally in efforts to build capacity for market instruments for emission mitigation. Indonesia's vision of the market instrument development can be described as being structured in three consecutive parts: starting with building the readiness (e.g. map policies and actors, develop market instruments and market infrastructure), followed by the establishment of the instrument and finally the implementation. Only the final step is here to provide an international linking. With respect to the readiness, an assessment was conducted: eleven Gol initiatives of low carbon development were identified as possible to integrate market instrument in its implementation. Key criteria apart from return of investment consideration is the experience with MRV, e.g. with respect to already existing standardized methodology for calculating the GHG emission reduction. To summarize, Indonesia follows mainly pathway 4 with a potential to get involved in more market-oriented pathways (i.e. pathway 1) depending on the overall results of the market readiness initiatives and the establishment of a robust MRV scheme.

4.5. Kazakhstan

Kazakhstan's Kyoto status as an Annex 1 country that is not part of Annex B is unique. This situation prohibited Kazakhstan to participate in any of the flexible mechanisms (such as CDM and JI) in the past. At the 18th session of the Conference of the Parties (COP 18) to the United Nations Framework Convention on Climate Change (UNFCCC) in December 2012 in Doha (Qatar), Kazakhstan declared its intention to join the list of Annex B countries of the Kyoto Protocol for the second commitment period, with a target to reduce its Greenhouse Gases (GHG) emissions by 5% from 1990 levels. Preliminary estimates, however, unveil significant challenges for the country to meet this target as it is anticipated that GHG emissions could reach 1990 levels as soon as 2017.

The country has a highly energy intensive economy. Plans for economic growth centre on ambitious industrial expansion that would see a near-doubling of emissions over the next two decades unless the emissions intensity of the economy is reduced. The biggest potential for emission reductions have been identified in the power sector, namely retrofitting existing power, heat and cogeneration plants; increased use of renewable energy sources; retrofitting the power and heat distribution

networks; and a fuel switch, e.g. from coal to natural gas.

In 2012, Kazakhstan began efforts to build a domestic emissions trading system (ETS) that began its pilot phase in January 2013. The system has been introduced through presidential decree and has to be built from scratch given the absence of former market based instruments in the country. The ETS is supposed to help the country in achieving its emissions reduction targets by 2020, and it will make Kazakhstan the first Asian nation to undertake an economy-wide cap.

Kazakhstan is most closely presented by Pathway 0 defined in AP1 of this project, which encompasses countries with no former experience with CDM / JI or other market based instruments to regulate emissions. Kazakhstan is a particular case under this pathway as it introduced the ETS from scratch without transitional instruments or market based measures to learn from. Consequently many legal inconsistencies and gaps as well as institutional weaknesses persist within the system and there is a strong need for international technical assistance and capacity building. The risk of malfunctioning and ineffectiveness of the system is also high as there is currently little support by the industry (in particular the power sector) and collaboration between different departments is low. A more integrative approach across the government will be important to increase efficiency and a smooth running of the system in the future.

Kazakhstan has openly approached international partners for targeted technical support to improve the functioning of the system. Most recently it is engaging with the World Banks Partnership for Market Readiness (PMR) for targeted support on specific technical aspects.

Capacity support needs have been defined among others in the following areas:

- Targeted analysis for the development of strategies and capabilities to fully integrate the ETS in the overall policy context
- Development of sector specific benchmarks and the design of a domestic offset scheme
- Fair integration of the power sector into the ETS
- Improvement of data verification within the ETS, training of verifiers
- Regulation of trading and market oversight

Given the current uncertainties in the international negotiations regarding new instruments and trading mechanisms Kazakhstan has not yet fully outlined its plans regarding the possible involvement into international trading of carbon credits. The offset scheme that is currently developed will be domestic in nature though once the international framework is emerging these features might of course evolve into a broader approach. The country also envisages the development and implementation of domestic and/or internationally supported NAMAs and this is supported by funds from UNEP and ADB.

If New Market Mechanisms will be adopted and implemented in Kazakhstan, they will most likely be embedded in the ETS structures and registry as a way to profit from carbon trading and crediting and to generate investments into low carbon infrastructure.

4.6. Mexico

Mexico is an emerging market with fast growing economy and GHG emissions. The assessment of Mexico's mitigation potential and existing and planned activities shows huge potential for mitigation activities in all sectors, although there is a clear prioritization of the energy and transport sector. This seems to be reasonable as approx.70 % of the country's emissions stem from these two sectors.

The government has understood the urgency of reaching a green development path and is putting forward numerous climate policy activities for addressing GHG mitigation. In this context Mexico shows a high interest in expanding their existing experience and actions already undertaken towards new market mechanisms. The government plans to introduce a voluntary emissions market which could be linked with already existing emission markets and schemes. Furthermore Mexico is very active in developing credited NAMAs. Over the last five years, the country gained capacity in developing and establishing NAMAs. In early 2014 Mexico introduced a domestic tax on CO₂ emissions ("carbon tax"), and is assessing options for setting up a sectoral ETS.

Future climate policy measures focus on the energy and transport sector, as well as building efficiency measures, and some industry processes. While being a host to a huge number of CDM activities, the majority of the projects are in the field of methane avoidance. Thus, CDM projects have so far not been a launch pad for future market based activities. A few PoAs exist for residential energy efficiency, as well as 2 renewable energy PoAs, which fit with the existing NAMA activities in this field and can thus provide experiences for a NAMA crediting approach. An interesting example in this regard is the NAMA for sustainable housing, which was using a sustainable housing PoA as its foundation.

A transition from CDM towards future climate policy instruments would therefore need to focus on the field of methane avoidance. Here the domestic offsetting approach under the carbon tax regime could provide interesting incentives for project proponents to keep operating their projects. Alternatively, a results based finance approach with the ultimate goal of converting action into a NAMA (or a market based incentive scheme such as the NMM) could be introduced.

The existing market based action in the energy and building sectors however can build successfully on CDM elements, such as methodologies or MRV approaches and registry systems. Reflecting the pathways Mexico is a candidate for pathway 4 (NAMAs), 3 (domestic offsetting under its carbon tax), but also for the pathway 1 (ETS).

4.7. Peru

Peru is the host of the UNFCCC COP 20 in late 2014, and thus experiences increased attention concerning its climate policy. To date, Peru is participating in a number of international programs that are fostering its capacities to design, track and implement mitigation actions. For example, through its participation in the global MAPS program, Peru is implementing the PlanCC project which is

providing a 2009 base year update to the GHG emissions inventory base year 2000 as a basis to define emissions scenarios to 2021 and 2050, options for climate change mitigation along this timeline and general support to define the Peruvian climate change mitigation contributions before the UNFCCC. Another example is the Low Emission Capacity Building (LECB) Program that is supporting Peru on its efforts to build capacities for GHG Inventory Systems and the design of Nationally Appropriate Mitigation Actions (NAMAs) for the brick, cement and iron industries.

Regarding market based instruments, Peru has gained vast experience through applying the CDM (till date 60 registered projects and 4 registered PoAs). Outside the UNFCCC, Peruvian actors are active in various activities in the voluntary carbon market, mainly in REDD activities in the forestry sector. The development of NAMAs has picked up only over the last 3 years, and currently Peru is developing numerous NAMA opportunities or initiatives in the waste, energy, agriculture, buildings, industry and transport sector, which could lead to numerous NAMAs. In its engagement under the Partnership for Market Readiness (PMR) Peru has developed a comprehensive Organizational Framework, which already identifies sectors/sector programs, where mitigation could be encouraged via a market-based instrument, such as energy supply (bioenergy & generation and use of energy), housing (sustainable housing & sustainable buildings), industry (construction materials: cement, brick, steel), waste (solid waste management), and transport (low carbon transport in Lima and Callao). The PMR thus comes as an excellent opportunity for Peru to capitalize on previous and current efforts and secure conditions for a market oriented approach to mitigation.

With regards to the transition pathways for further developing market based approaches, pathway 4 (NAMAs) appears most suitable. Given that the vast majority of CDM projects are hydro power activities, it is rather unlikely that sufficient existing hydro CDM projects will be converted into NAMAs. Besides that further CDM experience exists with other technologies, which could serve as a foundation for NAMAs, such as the fuel switch PoAs, or renewable energy projects.

4.8. Thailand

Along with successful economic growth, Thailand's greenhouse gas emissions have increased significantly since the 1980's. These trends continue with no appreciable decoupling of economic growth and emissions intensity which continues through periods of financial crises, natural disasters such as floods, and political upheaval. Modern Thai politics has been characterized by instability with regular coups, shifts between governments and constitutions and varying influence between civilian governments and military intervention. The political turbulence results in a lot of policy making, often with incomplete implementation, monitoring, delivery and coordination between ministries and policies.

Regarding the environment in general, active environmental NGO community fosters active debate and pushes for progressive environmental policy in many areas. Thailand has successfully implemented environmental policies, including in the areas of ecosystem vitality, sanitation and agriculture. However a negative trend is the constantly rising metric of CO₂ per capita. The Ministry of

Natural Resources and Environment, is responsible for climate policy, coordinated through the Office of Natural Resources and Environment Policy Planning (ONEP). ONEP is responsible for general climate policy development, but has an internal expertise focus slightly more centred on adaptation. The Thailand Greenhouse Gas Management Organization (TGO) works on technical policy implementation rather than policy formulation, but coordinates GHG management initiatives.

The multiple policies touching on energy and climate policy include National Economic and Social Development Plans which include sub plans and strategies such as the National Strategy on Climate Change, the Energy Policy and Development Plan, a national Renewable Energy Development Plan, the Thailand Climate Change Master Plan and the Energy Conservation Plan. Multiple initiatives including a fairly modest renewable portfolio standard and a feed in tariff for very small power producers have been successfully implemented. The energy sector is both the largest emitting sector and the sector with the greatest mitigation potential, followed by transport and other industrial activities.

No overall international climate commitments have yet been made; however engagement with market instruments for emissions control takes the form of five programs. A domestic offsetting program, the Thailand Voluntary Emission Reduction Program (T-VER), will continue many and build on some CDM activity in Thailand, while the Thailand Voluntary Emissions Trading Scheme (Thailand V-ETS) is working to help the private sector build MRV capacity and learn to count carbon in their business models. The Thailand Carbon Offsetting Program (T-COP) is an initiative to foster domestic voluntary demand for the domestic offsetting scheme. Through the PMR, Thailand is developing the Energy Performance Certificate Scheme (EPC) which focusses on energy efficiency baseline trading scheme based on tons of oil equivalent units and the Low Carbon City Program is a GHG crediting mechanism which is intended to help generate credits for the T-VER. If there is a future decision to move to a mandatory cap and trade program, this will have to be reconciled with these various schemes especially the Thailand V-ETS and the EPC. The implementation of mitigation policies will require significant policy coordination between the TGO and other ministries and agencies of government notably the state owned electrical utility. An expansion of the remit of the TGO from its original more CDM focused mission may be an opportunity to grow and expand its policy development capacity. Institutionally, it will be necessary to ensure that once a policy has been developed that all government ministries and stakeholders move to implement it. It is unclear when or if Thailand will opt for an ambitious broad market instrument to control emissions and there is reticence to move forward ahead with pledges and action before other South East Asian Partners.

From the pathways identified by the project, pathway 3 describes the “continuation and evolution of CDM activities, potentially shifting to domestic offsetting and still playing a prominent role for international offsetting”. The pathway only partially applies. CDM has ceased to play a significant role in Thailand. While international offsetting continues to play a role in the international voluntary market under the Gold Standard and VCS, many CDM projects, which have lost international buyers are either no longer being pursued or have started to express interest in applying for the T-VER domestic offsetting program. As a voluntary program, this demand is uncertain although the TGO foresees the government and various other companies to be buyers and T-VER offsets will be eligible in the V-

ETS being launched. It is unclear when or if Thailand will opt for an ambitious broad market instrument to control emissions and there is reticence to move forward ahead of other South East Asian Partners.

4.9. Turkey

Turkey's economic boom of the last decades has been accompanied by a large increase in its emissions of greenhouse gases. The power sector accounts for the largest share of emissions, with around 30 percent of emissions in 2008, followed by the industry sector, fuel use in buildings and transportation, agriculture and waste as the main emissions sectors.

There are indications that carbon markets will play an increased role in Turkey's emission mitigation strategies. Firstly, the country has made efforts to redefine its status on the UNFCCC level which in the past prevented Turkey from engaging in the flexible Kyoto Mechanisms. Turkey has highlighted a strong interest in the New Market Mechanisms that are in the process of development under the UNFCCC. Secondly, outside regulated markets, Turkish companies are very proactive in the voluntary carbon market indicating strong private sector commitment. Thirdly, Turkey has declared its medium-term objective of introducing a domestic Emissions Trading Scheme in the near future. This may result from a possible future accession to the EU, but also in the event that a (near-term) EU accession does not come to fruition.

However, given the uncertainties regarding the mechanisms and instruments available on the international level post 2020 and its future relationship with the EU, the country has not politically committed to a particular development path yet. Turkey's cooperation with bilateral and multilateral donors is hence focusing on the implementation of no-lose measures such as the establishment of an international MRV system and the commissioning of targeted modelling and policy assessment studies exploring the various options. The MRV system is currently being established with the support of the PMR and Germany and is based on international standards and could form a solid basis with regard to the integrity of the reported data to the UNFCCC and to avoid double counting in the future.

The voluntary carbon market, while not regulated under any official legislation, has played an important role in helping Turkey to achieve its targets to promote renewable energy sources by providing additional financial support to such projects. Turkey's recent proposal submission to the PMR states that the country would like to harness the lessons learned from its voluntary markets experience to inform a domestic ETS and other market based measures such as credited NAMAs. In particular, the government has expressed its interest in "link [ing] current VCM projects with any future market based mechanisms in order to let emissions reduction projects continue to benefit from new markets".

Turkey has benefited from significant funds from the PMR and bilateral donors such as Germany for the development of design elements such as a function MRV system. Additional starting points at this stage could be the support on the development of (credited) NAMAs or sectoral measures, including the piloting of NMM related measures. Furthermore, capacity building in the voluntary market could be developed with the objective of building elements of infrastructure that could later be used for a

domestic ETS could support the transition.

Turkey is represented under Pathway 0 that considers countries that have no CDM portfolio in place or only developed very few activities so far. Turkey's exceptional status under the UNFCCC Convention and the Kyoto Protocol hindered the country to use the project based flexibility mechanisms (i.e. the Clean Development Mechanism and Joint Implementation) in the past. However its experience with market based policies under the voluntary market and its ambition to join the EU with its legal requirement to establish a domestic ETS might assist and shape the establishment of market based measures in the near to medium term future.

4.10. Vietnam

Vietnam has introduced a dynamic policy process towards a low carbon economy based on the establishment of a strategic climate policy framework. Key pillars are the National Target Program to Respond to Climate Change (2008), the Law on Economical and Efficient Use of Energy (2010) and the National Climate Strategy including also a Plan of Greenhouse Gas Emission Management for the years 2012-2020 (2012). The Vietnamese Green Growth Strategy (2012) foresees an 8-10% reduction of greenhouse gas emissions intensity by 2020 from a 2010 basis. The sector based implementation structure is currently under development. CDM has been a major pillar of the country's first mitigation activities with a strong focus on hydropower projects. However, CDM activities are more or less on hold due to the global price trend for CERs.

The current Vietnamese focus is on preparations for the formulation and implementation of NAMAs including through human and technical capacity building especially in relevant government agencies. In 2010, the Ministry of Natural Resources and Environment (MONRE) has identified 28 possible NAMAs in the sectors energy, agriculture and land use, land-use change and forestry (LULUCF) and reported this list to UNFCCC in 2011. The total mitigation potential amounts to 3.2 Gt CO₂e. Relevant ministries for then started activities include MONRE, the Ministry of Industry and Transport (MOIT), Ministry of Construction (MOC), and Ministry of Agriculture and Rural Development (MARD). To further develop the different NAMA approaches the country uses its engagement under the Partnership for Market Readiness (PMR) as well as various international partnerships, e.g. with multilateral partners such as UNDP, the Asian Development Bank or bilateral ones, e.g. with the German or the Japanese Government.

So far, no NAMA project has been registered with the UNFCCC and there have been no bankable NAMA concept established. However, several NAMA concepts are currently under development at different stages in a variety of sectors including building, waste, cement, agriculture, renewable energies, biogas, chemical fertilizer and steel. This initiatives range from initial ideas to more advanced concepts. Relevant ministries include MONRE, MOIT, Ministry of Construction (MOC), and Ministry of Agriculture and Rural Development (MARD). In addition, the national mitigation capacities are to be strengthened through an intergovernmental coordinating entity for NAMAs. The Institute of Meteorology, Hydrology and Environment (IMHEN)/MONRE is most likely to fulfil this function and to

provide advice to the other counterparts within the government.

Against this backdrop, Vietnam follows mainly pathway 4 with a potential to using CDM as an offsetting approach (pathway 3). Vietnam is equally open to both market and non-market approaches with a current focus on non-market based approaches. The intention by the government to establish a carbon market scheme, published in 2013, is currently only a potential option to leave the door open for market-related activities especially in case interim results on the different national mitigation activities suggest this option as a promising approach to promote net mitigation benefits. The CDM legacy of the country is considered as an important starting point for international climate policy engagement, though it did not create widespread change in practices on a sectoral level and no mainstreaming of climate change thinking within the different ministries. The understanding of NAMAs is still fairly basic and will continue to go through a bottom up sectoral learning process over the next few years.

5. Reflection of research findings

As the market relevance of the CDM continues to fade until the mitigation ambition of the global climate regime is strengthened, a multilateral NMM has yet to take shape. The above assessment underscores that although their ambition levels vary, many countries are not waiting for a detailed international framework to move forward with their own domestic “post-CDM” policies. There is growing recognition that a multitude of diverse actions have already being taken according to domestic circumstances, often with international support, but also with a great deal of initiative on the countries’ own part. Developments in the countries show that policies are not following the above pathways per se, but that new and innovative measures are being implemented in a much more bottom-up global climate policy framework, in many instances involving various kinds of (domestic) market instruments.

This view has been confirmed in expert group discussions with experts and policy makers over the course of the research project⁸, in which participants (some of whom are involved in the negotiations surrounding the NMM under the UNFCCC) relayed that the negotiations on the NMM have been overtaken by more nationally driven initiatives such as NAMAs. Those national initiatives underscore the relevance of economic instruments for climate policy, as developing countries need to consider the financial aspects of mitigation action. The discussions reflected the broad perception that the CDM was a major achievement that provided a solid basis of lessons, tools and data for future climate policy instruments. Despite the current market, the CDM is regarded as a platform that has not completely been abandoned by all actors in the field (though in its current form, it may remain most important to least developed countries (LDCs) in the short term). Some speculate that the CDM may continue as a MRV toolbox, although not necessarily with a carbon pricing through markets

⁸ For instance in project workshops at Carbon Expo 2014 in Bonn and at Latin American and Caribbean Carbon Forum 2014 in Bogota, as well as at a expert dialogue in Bonn (see textbox 2).

component; others expressed the view that further reform of the CDM is necessary to retain its relevance.

Textbox 2: Expert dialogue on future climate policy instruments

BMUB Expert dialogue on “Practicability of Transitioning from CDM to Future Climate Policy Instruments”, held on 23 October 2014 in Bonn, Germany

In an expert discussion held for reflecting the research findings of the underlying project, several participants raised a number of further points noting that a NAMA approach does not facilitate engagement with the private sector, there is a current lack to engage the private sector through a NAMA approach, despite the important role that the private sector could play in international climate finance and mitigation efforts. While some banks may play a role through climate finance, some of which may be of commercial interest, the entrepreneurial character and engagement of CDM project developers is not captured in the majority of emerging NAMAs. Other participants challenged the group to dissect the CDM to identify design features that could be borrowed from the CDM for other instruments, noting that JI and conducting project activities in a capped environment could also provide some valuable lessons. One participant noted the philosophical opposition of some NGO's to offsetting, and wondered how this positioning fits into a new climate policy instrument landscape. A systematic mapping of CDM activities which were being included in emerging NAMAs was suggested as a further area of research.

In summing up the discussion, it was noted that it is important that the discussion of the future of such policy instruments need to reflect the UNFCCC process and the other initiatives such as the World Bank's Pilot Auction Facility, among others and how they are related and interact. The group generally regarded the CDM as a great resource, which offers a great deal of knowledge and structures worth saving, including specifically various parts of the pipeline with the potential to make worthy contributions to potential future climate policy instruments. The transition period towards future policy instruments has however already begun. There are a number of experiments using elements of the CDM in other policies, a phenomenon which can increasingly be expected in the future. In the current landscape, the suitability of a top down UNFCCC process was questioned, but rather it was found to be important to reflect and make use of the current dynamic bottom up policy innovation process which can be observed in a number of countries around the world.

6. Conclusion

Many developing countries and emerging economies heavily rely on emission intensive development pathways for their economies. Particularly the power and heavy industry sectors are often insufficiently regulated concerning environmental aspects, including mitigation policies. Over the past decade, however, the picture slowly changes, and low emission development becomes more and more important for various reasons. The CDM has contributed to this development, and despite all criticism the mechanism faces, numerous activities have induced behavioural changes on a global scale. Today many developing countries envisage a low emission trend for their economies, which has begun to exceed the mitigation ambition of many Annex I countries. In this context the CDM with its individual measures and programmes, and its dependence on unreliable demand for CERs, cannot reach the scale of abatement required in particular for the high emission sectors. More ambitious domestic measures thus need to be established.

A prominent instrument in this respect is an ETS, which can adequately address GHG emissions on a sector or economy scale – if designed properly. As incentive for introduction of such domestic measures the international community is discussing, designing and implementing several support schemes, such as the NMM or NAMAs. The NMM (here: SCM and STM variation) is thought as an incentivizing scheme for host country governments, which is despite its embryonic character anticipated to play a prominent role for supporting the future climate policy regime. NAMAs provide or more flexible outfit, though with a more flexible interpretation of MRV frameworks. The CDM represents the most comprehensive set of experiences with respect to climate policy mechanisms and instruments in developing countries – it can therefore serve as a building block and bridge for transforming emerging domestic mitigation activities towards significant own GHG emission reduction schemes with atmospheric benefits.

First, countries have already started using the CDM in a transformed way, i.e. not for sale of offsets to international markets, but for domestic uses of offsets - such as China (Chinese CERs), Mexico and South Africa (offsets for tax). The conceptual pathways for transition of mitigation activities to future climate policy instruments have been regarded in the context of ten developing countries. In reflection of the conceptual and empirical findings derived in the context of this project, and the current state and trends of climate policy, the following trends emerge:

- **Generally the CDM (in some cases, voluntary markets) have played an important role in helping to lay the foundation for further evolution of climate policies**, including in setting standards, building capacity, and developing a basic understanding of accounting and MRV. This is a general trend that can be observed in most countries. Even in countries that were not involved with the CDM or JI, such as Turkey, innovative efforts by voluntary market standards and actors greatly influenced by the diversity of CDM activity have helped inform the way countries approach their domestic climate policies.

- **Many countries have opted to continue CDM activities as domestic offsetting programs, thereby creating a source of (domestic) demand from non-Annex 1 countries.** Many CDM activities in China are beginning to transfer to the domestic driven CCER system, this is likely to accelerate as emissions trading is implemented nationally (see below). Elements of the CDM -notably the current approved methodologies- along with some projects are being adapted for the Thai Voluntary Emission Reduction Program (T-VER). CDM credits without international buyers can be used for compliance in the future South Korean ETS. And CDM activities will serve as the basis for domestic offsetting to help offset liabilities under the future South African and Mexican carbon tax systems.
- **There is interest in moving directly towards the implementation of a domestic emissions trading system** without a sectoral trading/crediting mechanism or new market mechanism as a stepping-stone. Emissions trading is a prominent element of several countries' activities as implementing partners of the World Bank's Partnership for Market Readiness (PMR), with China and Kazakhstan as prominent examples. In China, some CDM activities such as supply side energy efficiency projects have already been integrated into the scope of pilot schemes. This is likely to be further expanded with the advent of the national scheme after 2016. Other countries are developing emissions trading and baseline and crediting schemes on a voluntary basis, this is the case with the Nusantara Carbon Scheme (NCS) in Indonesia and the Voluntary Emissions Trading Scheme (V-ETS) in Thailand. The NCS is a domestic voluntary GHG reduction certification and registration scheme for which six methodologies are currently under review for consideration (RE, EE, A/R, Waste, V/V, and LULUCF). The Thailand V-ETS will aim to encourage participation from the electricity, petrochemical, and other energy intensive sectors.
- **A number of countries are opting for a carbon tax** (at least as an intermediate measure); some discussants mentioned that the implementation of a carbon tax may be easier for many developing countries than emissions trading and provides policy makers with the basic MRV provisions should they later want to transition to other policy instruments. Mexico, South Africa, and Chile have all opted for the imposition of a carbon tax. Some countries have developed innovations like allowing offsetting under the carbon tax framework. In Mexico the tax applies to fossil fuels with the exception of natural gas. In South Africa, large emitters including electricity generators and the mining, fossil fuel and steel sectors will be subject to the tax. The Chilean tax will be applied to power generators with installed capacity equal or larger than 50 megawatts (MW). As mentioned above, in Mexico and South Africa taxes will generate demand for credits coming from domestic CDM activities, possibly at much higher prices than the current market rates.
- **In the absence of an NMM, many countries are focusing on the more advanced support vehicles of multilateral climate policy, where NAMAs play a prominent role.** The NAMA concept continues to evolve and is still in the process of developing MRV provisions; but it has already become an important springboard serving as a forward-looking national mitigation framework. Most NAMAs are being developed without a clear perspective of tradable or credits or allowances, indeed many do not necessarily include a market-based

approach (though the option is not excluded). These processes are not necessarily linked to the CDM legacy of the respective countries, though in some cases the CDM provides a good starting point for further work. In Colombia, NAMA activities in the transport sector are an example which directly builds on early experience in transport CDM projects. In countries like Indonesia and Vietnam, a great deal of effort is being invested in exploring sectoral options to ensure NAMA readiness. In Vietnam, despite being a country with a successful CDM track record (with a strong focus on small hydro) new and different sectors are being studied for NAMA activities where line ministries initiate sector-wide learning processes that have not been possible or attractive under the CDM.

The abstract possibility of a future NMM, under an uncertain 2020 climate policy architecture, with uncertain demand is not likely to play a driving transitional role for mitigation efforts in the short or medium term. Indeed given the current lack of multilateral guidance regarding such new mechanisms, not in particular the current lack of demand, the window of opportunity for a seamless transition from the CDM to a universal NMM is likely to close before such a new mechanism becomes fully operational. In the meantime, many countries are taking meaningful bottom-up action instead.

In many countries, the capacity and expertise acquired through the CDM continues to provide a basis not only for the remaining current pipeline, but also for continuing other market-based and non-market based measures in the form of emissions trading, taxes, domestic offsetting and particularly NAMAs. Such measures are not mutually exclusive but their co-existence will increase the need for some kind of mechanism to help serve as a global MRV and accounting system not least for countries, or groups of countries, which may wish to take a collaborative approach to emission reduction.

While it is a positive signal that a number of countries are independently taking action and that support is being made available to support such action, it is clear that a multilateral approach would facilitate accountability and efficiency in global mitigation action. A multitude of different national and regional incentive schemes, MRV requirements and trading approaches would increase the complexity and opacity of international climate policy, increasing the difficulty of international development and climate finance efforts.

A multilateral approach to incentivize and account for mitigation action, to help build capacity, and to foster increased ambition would be important for making progress towards a clearer understanding of the architecture of the new climate agreement in Lima and Paris. However, any such measure would need to recognize the diverse policy landscape for market mechanisms in order to play a constructive role. In further negotiating and designing the NMM (especially the important issue of moving from offsetting to net mitigation) and in deciding what to do with the current institutional framework of the CDM, parties need to consider to what extent a top down approach is a viable solution, or how a broader approach allowing for centralized oversight, but also for bottom-up activities (as initially intended under the framework for various approaches (FVA)) can be reconciled to effectively drive mitigation in this increasingly “fragmented” world.

References

- Baron, Richard; Buchner, Barbara; Ellis, Jane (2009): Sectoral Approaches and the Carbon Market, OECD/IEA Report. <http://www.oecd.org/env/cc/42875080.pdf>
- Koakutsu, Kazuhisa; Usui, Kenta (2013): New Market Mechanisms in charts, Version 4.0, Institute for Global Environmental Studies IGES, Japan, URL: http://pub.iges.or.jp/modules/envirolib/upload/3352/attach/new_mech_charts.pdf
- Michaelowa, Axel; Butzengeiger-Geyer, Sonja; Castro, Paula; Harthan, Ralph O.; Hayashi, Daisuke; Healy, Sean; Maribu, Karl Magnus; Okubo, Yuri; Schneider, Lambert; Storrø, Ingunn (2010): Options for utilizing the CDM for global emission reductions, Research Paper for the German Environment Agency, <http://www.umweltbundesamt.de/sites/default/files/medien/461/publikationen/4039.pdf>
- Schneider, Lambert; Cames, Martin (2009): A framework for a sectoral crediting mechanism in a post-2012 climate regime. Report for the global Wind Energy Council, Oeko Institut, <http://www.oeko.de/oekodoc/904/2009-022-en.pdf>
- Spalding-Fecher, R. (2013): National policies and the CDM: options for the future. Report for the Swedish Energy Agency, <http://www.energimyndigheten.se/Global/Internationellt/Carbon%20Limits%20-%20National%20Policies%20and%20CDM.pdf>
- UNFCCC (2012a): Views on the new market-based mechanism. Submissions from Parties, Addendum, Agenda item 3(b)(v), Ad Hoc Working Group on Long-term Cooperative Action under the Convention, Fifteenth session, part two, http://unfccc.int/documentation/documents/advanced_search/items/6911.php?preref=600007174#beg
- UNFCCC (2012b): Views on the new market-based mechanism. Submissions from Parties, Addendum, Agenda item 3(b)(v), Ad Hoc Working Group on Long-term Cooperative Action under the Convention, Fifteenth session, Bonn, 15-24 May 2012, <http://unfccc.int/resource/docs/2012/awglca15/eng/misc06.pdf>
- UNFCCC (2011): COP 17 Decisions on Various approaches, including opportunities for using markets, to enhance the cost-effectiveness of, and to promote, mitigation actions, bearing in mind different circumstances of developed and developing countries, FCCC/CP/2011/9/Add.1, Bonn, <http://unfccc.int/resource/docs/2011/cop17/eng/09a01.pdf#page=4>