KFW BANKENGRUPPE

CDM BASELINE APPROACHES FOR POA UPSCALING AND NEW MARKET MECHANISMS (NMM)

BUILDING NMM ON CDM ELEMENTS

Final Report
Zurich, 20 April 2012

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B2300A CDM ELEMENTS FOR NMMS 2012-04-20.DOCX

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CONTENT

1. INTRODUCTION AND OBJECTIVE

Over the last months, both the UNFCCC as well as voluntary standards such as the VCS have made rapid progress in establishing the conceptual and regulatory setting for standardized approaches in their standards (see e.g. EB65a23 or VCS2012). With the definition of New Market Mechanisms[1] COP/MOP17 in Durban an important step in the transition away from the "conventional" CDM with its "project-by-project" approach laid down in the Marrakesh Accords to more streamlined Standardized Approaches to baseline setting and additionality has been made.

Although the CDM has been widely criticized by some as being cumbersome and bureaucratic and by others as being too lenient in assuring environmental integrity, the past almost 15 years of build-up and improvement of the regulatory and methodological body of the CDM may be of use for design and operationalization of standardized approaches to baseline setting that may be used for upscaling in POAs and New Market Mechanisms.

In the following, we provide an overview on major methodological tools and elements from the CDM (Section 2), illustrate how these tools and elements can be used in standardized approaches (3), discuss the issue of the interaction of CDM with national policies and regulations and considers approaches to "ambitious baselines" (4) and closes with preliminary conclusions (5). Apart of providing an overview of current status of standardisation in the CDM the paper seeks to stimulate the discussion on how to best use the existing methodological body of the CDM in New Market Mechanisms. The paper does is not seek to provide an exhaustive analysis.

1 COP17 defined a NMM and provided the option for the use of various approaches under NMM. Detailed rules are pending. We are currently using the term „New Market Mechanisms" loosely as a synonym to what some people also may call „crediting mechanisms", „standardized approaches to baseline and additionality" etc. While these terms may have different regulatory meanings in future GHG mitigation schemes we are of the opinion that there are certain methodological issues that will be common to all these approaches.

2. OVERVIEW ON METHODOLOGICAL ELEMENTS AND TOOLS FROM THE CDM

CDM BRICKS AND TOOLS

Positive list	Grid EF	Applicability conditions	Autonomous improvement	Additionality by Benchmark	E+/E-	
First of its kind	Additionality tool	Combined tool	Impact approach	Survey	Stakeholder consultation	Control groups
Historical performance	Activity data	Nameplate performance	Conservative-ness	Common practice	Tools for emissions	

Figure 1 Illustration of important methodological elements of the CDM that may be used in future standardizes approaches for New Market Mechanisms. The elements are further discussed in Annex II. Source: INFRAS.

Many methodological "bricks and tools" have been developed over time that constitute the body of current baseline methodologies of the CDM. Annex II provides a simplified tabular overview of important elements and tools for (A.) baseline determination and (B.) additionality demonstration. The Tables in Annex II aim at highlighting the wealth of existing approaches to key issues of baseline setting that may support and facilitate the development of standardized approaches.

3. USE OF METHODOLOGICAL ELEMENTS AND TOOLS FROM CDM IN STANDARDIZED APPROACHES

BUILDING STANDARIZED APPROACHES ON THE BASIS OF CDM BRICKS AND TOOLS

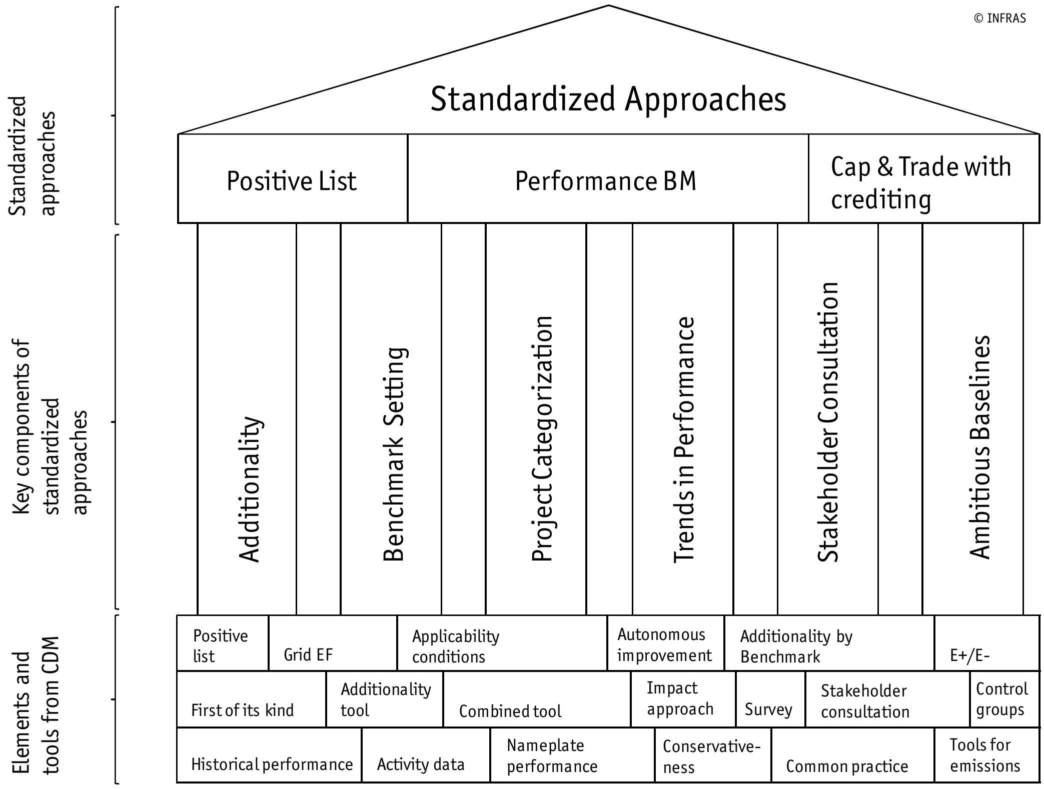

Figure 2 Illustrative overview on how standardized approaches may build on existing methodological elements and tools from the CDM. A discussion of key components is given below. Source: INFRAS.

Many different approaches to standardized baselines have been identified over the last 15 years (see e.g. Lazarus 2000, Ellis 2001, DFID2010).

For the purpose of this paper, we distinguish three main "families" of standardized approaches:

i. **Positive lists**, where project types that are on the positive list are additional.
ii. **Performance benchmarks**, where projects that meet or exceed a pre-determined level of the metric may be deemed as additional and the same or a different level of the metric may serve as the crediting baseline
iii. **Cap-and-trade systems** with crediting, where a regulator allocates to members (companies, municipality, utilities) of the cap-and-trade system a quota of tradable emission rights.

These families are not exhaustive and have a certain overlap, but may help to represent main requirements for standardizing baselines. The current EB guidance for standardized baselines aims at defining for each country standard positive lists of eligible project types (i) characterized on fuel, technology, output etc. (EB65a23). However, in order to determine the project types on the list, the guidance requires a performance benchmark based analysis of the considered sectors or markets.

In parallel, several more advanced developing countries such as China, India, South Korea, Mexico, etc. are looking into mainly regional cap-and-trade systems (iii). Such regional or sectoral cap-and-trade systems may also be used for the crediting in the context of New Market Mechanisms. With such an approach, synergies between national mitigation actions and international crediting can be achieved, given that a transparent bookkeeping is established that rules out double counting issues.

As a third example, the latest Guidance for Standardized Methods from the voluntary carbon standard VCS 2012 distinguishes "performance methods" i.e. performance benchmarks (ii) and "activity methods" i.e. positive lists (i).

Although different in their structure and operation, most standardized approaches share certain elements that need to be considered in their design and application:

- Benchmark setting
- Trends in performance
- Additionality demonstration
- Categorization of projects
- Stakeholder consultation
- Ambitious baselines

Standardized approaches may encompass very different approaches, from positive lists over performance benchmarks to sectorial cap and trade systems. In the following, we illustrate the relevance of the CDM toolbox and experiences made in the context of the development and application of CDM methodologies for the creation of new standardized approaches (without claiming to be exhaustive).

3.1. BENCHMARK SETTING

Standardized approaches often work on the basis of performance benchmarks: The benchmark threshold is often defined at the average of the 20% top performers in the considered (sub-) sector or market (as stipulated by para 48c of the Kyoto protocol) or at other stringency levels (e.g. at 15% in the methodology for ultra-supercritical coal power plants ACM0013). The benchmark may

(i) serve as a **standardized baseline emissions level** that is independent of the specific project and/or

(ii) serve as an **additionality criteria** in that projects that perform better than the benchmark (e.g. have lower specific emissions in tons of $CO2$ per ton of product) are deemed automatically additional.

This concept has evolved from benchmarking approaches in existing CDM methodologies[2] in sectors such as refrigerating appliances (AM0070), power generation (AM0013) and cement (ACM0005 and NM0302). In particular, the CDM methodologies provide important elements of experience and solutions in the following issues related to performance benchmarks:

Challenges in standardized approaches their interaction with CDM elements and tools

› **Data availability and coverage**: The work in the CDM highlighted important issues in data collection for benchmarks. The experience from the CDM showed that the availability and often the confidentiality of performance data is a major obstacle to benchmark setting. Solutions found within the CDM include the use of data from industry associations databases (e.g. as proposed in cement benchmark methodology NM0302) with issues of data coverage and verification to be solved, or the use of performance data that is regularly collected by public agencies e.g. from the labelling system for refrigerators in India (as in the latest version 3.1 of the methodology for efficient refrigerators AM0070).
However, host country Designated National Authorities (DNAs) with potential support by in-

[2] For a discussion of benchmark setting approaches in the CDM see also section 3.3 in DFID 2010.

vestor countries and international financing institutions will have to play an important role in facilitating and providing the relevant data for building standardized baselines for the market. Also, the government or governmental agencies represent often the only entities that have the legal power to require private sector players to provide data e.g. on plant fuel use, efficiencies, etc. The experience in the early days of CDM showed that countries, where the DNA was able to provide the emission factors for the national grid (e.g. for grid connected renewable power generation projects – ACM0002) had a tremendous advantage over countries without official grid emission factors in the use of CDM for renewable power generation. Similarly, countries could now assure their marked readiness for up-scaling of CDM as well as for New Market Mechanisms post 2012 by fostering the systematic collection, analysis and verification of sector wide GHG relevant data.

In general, standardized approaches shift the onus of work of baseline determination from the project developer to the body (DNA) calculating the standard. Higher upfront cost for the DNA lead to lower transaction costs later for individual project proponents.

› **Benchmarks data vintage**: The discussion and controversy about the CDM methodology for the building very efficient new fossil power plants (such as ultra-supercritical coal plants) ACM0013 during late 2011 highlighted the importance of the vintage of sector data that is used to define benchmarks. In particular in sectors where performances tend to improve over time, limited data availability may lead to a situation, where data is over ten years old and may not be considered representative for the benchmark at the time of project start. The request for stringent rules on data vintage has been raised already in the early days of the CDM (see Lazarus 2000). As a general rule, the faster technologies and specific emissions change in a sector, the more recent the data should be and the higher the need for "dynamic baselines".

In its latest *Guidelines for QA/QC of data used in the establishment of standardized baselines* (EB66a49), the EB made a first step towards regulating data vintage for standardized approaches. The problem is that in particular in LDCs and other developing countries, limited data availability has shown to be a major obstacle to the dissemination of the CDM and that adequate procedures to fill gaps in data such as sampling have to be applied.

More stringent requirements regarding data vintage increase the cost for maintaining standardized baselines. As these costs are to be borne by the DNA (and often by an international donor), high requirements for data vintage do not increase transaction costs for individual project proponents but help to maintain the environmental integrity of the standardized approaches. A conservative balance between optimal data vintage and up-front costs for DNAs has to be found.

- **Level of aggregation:** Benchmarking in the CDM differentiates by process or product, e.g. by defining benchmarks for each class of model size in the refrigerator market (AM0070) or by defining a benchmark for a particular fuel for the entire power sector (ACM0013). These experiences on the appropriate levels of aggregation for benchmarks can also guide the solution of finding appropriate levels of aggregation for the further development of standardized approaches.
- **Additionality BM vs. baseline emission benchmark:** In the context of the CDM, a discussion has started as to whether the benchmark (BM) for determining the baseline emission level should be on the same level as the benchmark for additionality or on a less stringent level[3]. Based on qualitative considerations, DFID2010 recommends the same benchmark for both additionality and emissions determination for greenfield projects and a higher additionality BM and lower emissions BM for existing facilities, arguing that in general the performance of older plants may be assumed to be more heterogeneous than in new plants. Future rules for standardized approaches will build on this experience, but further analysis based on real world data will be needed to be able to design pragmatic and environmentally sound rules on benchmark setting.
- **Signal-to-noise ratio**: This measure is used in science and engineering to compare the level of a desired signal to the level of background noise[4]. It has been used repeatedly in the CDM to describe the ratio between the amount of emission reduction of a project (signal) to the typical uncertainty in emission reduction. E.g. Lazarus (2011, p.2) provides an example of supercritical coal power technology, that may increase plant efficiency from 38% to 39%. He points out that non-project related factors such as coal quality or cooling technology can affect plant efficiency to a greater extent than the boiler efficiency improvement that constitutes the CDM project. If signal-to-noise ratio is not increased by increased stringency of the methodology and procedures assuring conservativeness, the emission reductions may cease to be *real and measurable.*

  The issue of signal-to-noise is prevalent in all project types where emission reductions are relatively small compared to overall emissions, as is the case in most energy efficiency projects, be it in industry, households and transport. In order to reduce the signal-to-noise ratio, CDM methodologies often introduce procedures to reduce the uncertainty of emission reduction es-

3 In the context of latest guidance EB65a23 this is the question if threshold levels Xa% = Xb% for fuels and Ya% = Yb% for technologies or if Xa% > Xb% and Ya% > Yb%. The fast start interim values in Annex 1 of EB65a23 define equal threshold levels (Xa% = Xb% = Ya% = Yb%) of 80% for priority sectors and 90% for others.

4 See e.g. Wikipedia. If the signal to noise ration becomes too low, e.g. the level of noise and distortion in a phone or skype conversation becomes too high, the signal cannot be detected anymore, i.e. the voice becomes incomprehensible.

timates or introduce caps to assure conservativeness. These experiences in the CDM may become very relevant when designing standardized approaches for energy efficiency. It shows that standardized approaches may work best with projects with very significant gains in energy efficiency (e.g. >15%) or the applicability conditions of EE measures have to be defined stringently so that a robust *deemed savings approach* can be applied.

3.2. TRENDS IN PERFORMANCE

Many key technologies are regularly improved in their performance. The economic incentive to reduce fuel costs and national and international policies fostering energy efficiency and GHG mitigation lead to a continuous reduction in GHG intensity with most technologies, also in absence of carbon markets. Although there has been a vivid debate about static (i.e. constant) versus dynamic (i.e. changing over time) baselines in the CDM some years ago, the notion that baselines (and therefore benchmarks) have to dynamically adapt to changes in the regulatory framework and in technology markets have been introduced into the CDM from the onset. In the following, we provide a few (non-exhaustive) illustrations:

Challenges in standardized approaches their interaction with CDM elements and tools

› **Autonomous technical development:** An example of how the trends in performance is taken into account in the CDM is the methodology for the manufacturing of energy efficient domestic refrigerators (AM0070). In determining the baseline benchmark, a factor taking into account "autonomous technical development (ATD)" may be used reflecting the annual autonomous improvement in energy efficiency of market appliances over time in the baseline. Similar factors may also play a role in standardized approaches to make sure that performance benchmarks follow the trends in regulation and technology. More research is needed to identify typical values of ATD for key technologies that might be used as defaults to simplify monitoring requirements.

› **Control group:** The methodology for energy efficiency technologies and fuel switching in new buildings (AM0091) tracks changes in performance benchmarks by using a control group approach: A group of buildings outside the CDM project define the "baseline buildings". The specific baseline emissions per gross floor area of the defined group of baseline buildings is updated on an annual basis and provides the reference for the calculation of emission reductions. The problem with control group approaches I the CDM is that they are rather expensive and lead to high transaction costs. However, with standardized approaches that can potentially reach much higher replication potentials, the issue of relative costs of a control group approach should be considerably mitigated.

- **Data vintage:** The trends in performance are also close linked to the rules for adequate data vintage mentioned above.

3.3. ADDITIONALITY DEMONSTRATION

The concept of additionality lies at the heart of the CDM. The Kyoto Protocol requires that emission reductions have to be *additional to any that would occur in the absence of the certified project activity* (Art. 12 para 12(c)). The two main workhorses of the CDM for the demonstration of additionality are the *Additionality Tool* (AT) and the *Combined Tool* (CT), the latter combining additionality demonstration with baseline determination. Some CDM methodologies provide also simplified procedures, however, most methodologies build on these concepts. In the CDM a whole toolbox for demonstration of additionality has emerged over time that may be used for standardized approaches:

Challenges in standardized approaches their interaction with CDM elements and tools

- **Investment Analysis and Barrier Analysis:** These steps are part of both the Additionality Tool and Combined Tool The Investment Analysis evaluates the economic and financial attractiveness and feasibility of the project in absence of the CDM. The Barrier Analysis determines if the implementation of the project activity would be prevented by barriers in absence of the CDM. These additionality tests are carried out on a project-by-project level, as local circumstances may heavily influence the profitability and barriers in a project. The *Guidelines on the assessment of Investment Analysis* (EB62a05) and the *Guidelines for objective demonstration and assessment of barriers* (EB50a13) further operationalize the two approaches.
  The latest guidance on standardized approaches from the EB (EB65a23) seeks to translate these concepts from the project level to the sector/technology level. The guidance provides DNAs with a tool to develop a positive list for sectors with fuels/technologies/measures that are deemed automatically additional. Also, it provides some guidance on how to generate national/regional benchmark values for baseline emissions. In the guidance, for instance, only those fuels/feedstocks for a specific technology are included in the positive list that are *facing barriers or that are less commercially attractive*. With regards to financial attractiveness, fuel markets with their rather high variability will be difficult to aggregate. With regards to barriers on a sector/technology level, the transformation of objective barriers that can be overcome with additional finance into cost items as described in the *Guidelines for objective demonstration*

and assessment of barriers (EB50a13) will probably be necessary to operationalize barriers in an objective way on an aggregated level.

- **Common practice test:** In the conventional CDM additionality test this has been a mere "credibility test" (included in both AT and CT)
  However, common practice approaches are becoming much more important in standardized approaches. In the latest EB guidelines on standardized approaches (EB65a23) the threshold values X% and Y% may be read as thresholds for common practice of fuels and technologies, respectively. Building on the experience that additionality determination on a project level faces manifold problems in the CDM, the common practice test has become a model for standardization.
- **First of its kind:** A similar concept is the notion that projects that are the first of its kind in a given region are considered automatically additional, based on the rationale that barriers or limited profitability have prevented the implementation of the project type so far. Also this concept, although methodologically not fully convincing, can be translated easily to standardized approaches. A problem with this concept is the significant potential for free riders in particular for large projects (e.g. greenfield low emissions aluminium plant), as not every first of its kind project faces barriers to its implementation.
- **Impact approach to additionality:** An important lesson from the CDM was also that the standard Investment Analysis and Barrier approaches to additionality were not particularly suited for certain situations, e.g. for projects requiring very large investments or for projects where investment decisions are taken by public bodies, such as national, provincial or municipal governments or their implementing bodies. In public investments, the profitability of the project is often not the central objective of the undertaking, but other targets, such as the provision of efficient energy or transport services for the local population and economy and other benefits e.g. the support of economic growth, improvement of air quality etc. Therefore, methodologies for public sector transport projects use the *impact approach* to additionality[5], i.e. it has to be demonstrated that the financial contribution from CERs have a significant impact on project finance and are e.g. comparable to costs for operation and maintenance. This element of impact assessment may play an important role also in standardized approaches, in particular in large scale infrastructure projects.
- **Additionality by benchmark:** The CDM approach to additionality that is closest to standardized approaches is the use of performance benchmarks not only for baseline emissions, but for

[5] The impact approach has certain similarities to the „old step 5" of the Additionality Tool in its two first version and that was removed by the EB (EB 29, February 2007).

the demonstration of additionality e.g. in efficient domestic refrigerators (AM0070) or highly efficient fossil power plants (ACM0013) - see benchmark setting above.

3.4. CATEGORIZATION OF PROJECTS (INKL. POS. LIST, APPL. CRITERIA)

Different system for the categorization of CDM projects have been proposed (see also Annex I). The right level of categorization is very important for applicability criteria in benchmark methodologies. The CDM methodologies development built a significant body of know-how on how to define applicability criteria so that they are neither (i) too narrow, which requires too many methodologies to cover the different project types, nor (ii) too broad, as this leads to very extensive methodology texts to cover every special case possible, which become difficult to read and apply for users. An example for this is the *Consolidated methodology for electricity generation from biomass residues* (ACM0006) which in its version 9 distinguished 11 scenarios for power generation, 10 scenarios for heat generation and 8 different scenarios for the use of biomass residues in the baseline case including all possible permutations. The applicability of this methodology has clearly become too broad, and the subsequent revision and splitting up of ACM006 into a "pure" power only methodology (ACM0018) and the remaining methodology for power and heat generation (ACM0006 version 10ff.) allowed for considerable clarification and simplification. Very similar question will also arise in the definition of appropriate aggregation levels and categorization of project types for defining standardized baselines.

3.5. STAKEHOLDER CONSULTATION IMPROVES BASELINE SETTING

Stakeholder consultation is an element of the CDM project cycle that is not directly related to methodological issues. Also, stakeholder consultation has not played a very prominent role in the CDM and it has repeatedly been criticized. The Gold Standard[6] provides a much more robust procedure for stakeholder consultation. However, stakeholder consultation may play a much more important role in standardized approaches, because decisions on CDM projects and in particular PoAs as well as future New Market Mechanisms may impact even larger communities and these approaches will only work on large scale if they are implemented in line with the needs of sustainable development. In addition, robust stakeholder consultation procedures may give a voice to environmental NGOs and may also constitute a measure to strengthen the environmen-

6 See http://www.cdmgoldstandard.org/.

tal integrity of proposed NMMs. In this sense, public consultation can serve as a "safety net" on top of the established procedures for additionality demonstration.

4. E+/E- AND THE USE OF CDM ELEMENTS FOR FUTURE "AMBITOUS BASELINES"

4.1. ON THE CURRENT STATE OF E+/E- RULING

In the early days of the CDM, the project-by-project approach was built on the basic assumption that the CDM is independent of national policies and regulations. In the context of aditionality tool it became at some point obvious that projects should not deemed additional that are mandated by enforced national legislation. On the other hand, the CDM-EB identified perverse incentives for host countries not to implement GHG mitigation regulation, as this would limit the potential for CDM in the country, leading to the famous E+/E- ruling. A documentation and analysis of this issue is provided in Annex III.

In short, the CDM-EB has gained quite some experiences on the interaction between the CDM and national policies and regulations, but in the view of many observers the resulting regulation was deemed inconsistent and not fit for purpose. In EB55 the Board *agreed not to continue the consideration of the treatment of national and sectoral policies in the demonstration and assessment of additionality.* From now on this should be *assessed on a case by case basis*.

For many observers, this conclusion intends to draw a line under the issue that is caused by an inherent feature of the CDM. However, the issue of interaction between domestic mitigation action and credited measures such as the CDM is expected to re-emerge in the context of standardized baselines and New Market Mechanisms.

4.2. TREATMENT OF MITIGATION POLICIES AFTER DURBAN

The Durban Platform

A possible solution to the problem of the interaction between crediting mechanisms and national policies and regulations may be found by taking the broader perspective of the New Market Mechanisms and domestic action from non-Annex-I countries in the new international framework post 2012.

Many developing countries have since long promoted and implemented renewables and energy efficiency activities for reasons of cost saving, energy security, the promotion of domestic build-up of clean industries, climate change mitigation and others. Under the first commitment period of the Kyoto Protocol, they have not been subject to quantitative emission limitation or reduction targets. With the quantitative (yet voluntary and somehow vague) pledges by developed and developing countries in the aftermath of the COP15 in Copenhagen and the prospect of the *Durban Platform for Enhanced Action* developing either a protocol, another legal instrument or *an agreed outcome with legal force*" applicable to *all parties under the Convention,* the framework is changing. If international negotiations evolve as sketched for the Durban Platform, all major emitters including developing countries will have some sort of "legal" obligation to contribute to reducing global GHG emissions.

Accelerated implementation of national and sectoral policies and CDM

In the following, we analyse the interaction of these domestic mitigation activities by the developing countries with existing (CDM) and New Market Mechanisms that result in crediting.

In practice, in order to meet their pledged targets, also developing countries will need to accelerate the implementation of national and sectoral mitigation policies. Assuming the continuation of some sort of crediting marked based mechanisms in these countries, this raises a couple of questions:

› If host countries increase their mitigation efforts based on national and sectoral mitigation policies, is this to be treated as a baseline that would happen in absence of the credited market mechanism or is it an E- policy and should not be considered as baseline?
› Do emission reductions achieved by credited market mechanisms count towards meeting the developing countries' pledges or is such double counting to be omitted and units credited to other countries may not be counted (similar to the JI)?
› In the CDM, the entire emission reduction from the project is credited to the CDM, even though the financial contribution from the CDM may be smaller than the host country's subsidies contributing to the project. Will in future emission reductions by mitigation projects be shared between the CDM investor and the host country? If yes, how should be shared? (Sharing may be negotiated or may follow fixed rules, e.g. an allocation of credits according to their respective financial contribution.)

In the post Durban context, the treatment of national and/or sectoral mitigation policies in relation to crediting market based mechanisms appears in a new light. While in the CDM the implicit underlying assumption was that developing countries do not need to engage in mitigation action, the Durban Platform requires the implementation of national and/or sectoral mitigation policies becoming the cornerstone of future climate policy in *all* countries.

4.3. MOVING TOWARDS AMBITIOUS BASELINES

A. Ambitious baselines in the existing CDM

In order to analyse further lessons learnt from CDM for NMM (beyond the aspect of E+/E-) we analyse in the following options for the implementation of ambitious baselines. Building on conventional CDM, Schneider (2008) discussed three main approaches on how to introduce *CDM with atmospheric benefits.* Adapting this concept for options of host country contribution to mitigation, the following three approaches to ambitious baselines might be identified:

a) Discounting of emission reductions in the process of issuance

Approach: In this proposal, in each issuance a certain pre-negotiated share of CERs is credited to the host country and counts towards their mitigation pledges or targets. E.g. 30% of CERs are cancelled[7] in the registry for the benefit of the host country compliance and 70% are available to CDM investors. Such a sharing mechanism could build on the existing similar procedure for the share of proceeds. The host country share could be the same for all sectors, or may differ between sectors and project types or may even be negotiated for each individual project, depending e.g. on host country versus CDM investor contribution to project finance.
Adaption for standardized approaches: This approach could be very easily adapted for standardized approaches, in that only part of the generated credits is issued and the rest cancelled for host country compliance. However, the percentage value would be rigidly set ex-ante and would not depend on actual host country contribution. Furthermore the setting of discount thresholds may become an increasingly political decision which will require potentially difficult negotiations.

b) Ambitious baselines that are set below the level of business-as-usual emissions

Approach: Here, for each baseline or benchmark two levels are defined: a (less stringent) business-as-usual reference level (BAU) and a (more stringent) ambitious baseline level (AB). The host country receives all CERs for their own compliance from improvement in performance over

[7] *Note*: the rules for MRV and GHG reporting and compliance regimes (if any) for non-Annex I countries are not clear as of yet. Depending on the rules, cancellation may not be necessary, e.g. if rules similar to Joint Implementation would be applied.

the BAU-level up to the AB-level (see Figure 3). It is only when projects achieve even higher emission reductions over the AB-level that they generate CERs for the international trading.
Adaption for standardized approaches: BAU and AB levels can also be defined for standardized baselines. BAU might be determined e.g. by the already planned improvement of national efficiency standards over the next years. The ambitious baseline level AB may be defined e.g. based on an accelerated implementation of national standards that are introduced as a domestic mitigation measure. Approaches to determine this ambitious baseline level might build on (i) emission factors of best available technology, (ii) efficiency standards in more advanced countries[8] or (iii) average performance of top 10% (similar to benchmarking in EU-ETS).

EXAMPLE OF INTERNATIONAL CREDITING BEYOND AMBITIOUS BASELINE

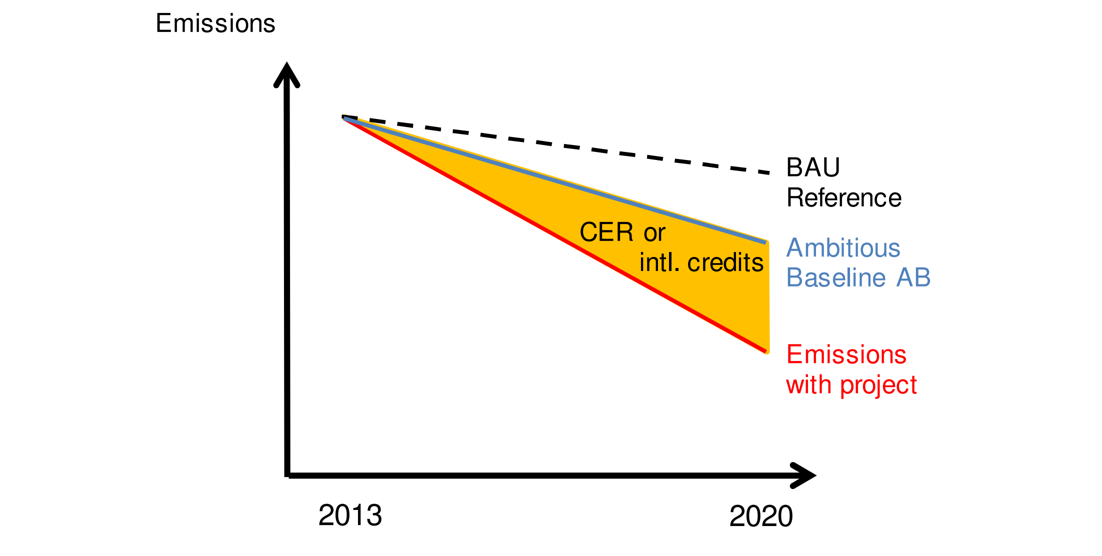

Figure 3 Source: INFRAS

c) Shorter crediting periods compared with the lifetime of a project:
Approach: Here, the crediting period would be reduced below the lifetime of the project. For instance, the CDM buyers would receive all generated CERs for the first five years of a project that runs twenty years. During the remaining 15 years, the generated CERs would be cancelled for the benefit of the compliance of the host country.
Adaption for standardized approaches: Similarly to (a) this approach could be very easily adapted for standardized approaches. However, many projects may start only later than 2015

8 Please note that energy efficiency standards in Annex-I counties are not necessarily stricter than in non-Annex-I countries.

and most host countries may have an interest in being able to count part of the mitigation benefits already for the year of the pledges 2020, which may make this option less attractive.

All three options may be feasible. Discounting emission reductions (a) seems the most straight forward option to implement in the current setting of CDM (which is corroborated by Schneider 2008). In the context of standardized approaches which is based much more on sector wide baselines and benchmark, the natural appraoche might be (b), where only mitigation action that goes beyond the (transparently defined) host country action is credited for international trading.

B. Ambitious baselines in New Market Mechanisms post 2012

The range of options for the implementation of ambitious baselines becomes much larger if one moves away from conventional CDM and looks into Mechanisms to be established post 2012. In general, it should be noted that the definition of ambitious baselines and benchmarks is primarily a political issue of the international climate negotiations, as it touches on the issues of burden sharing, common but differentiated responsibilities, equity considerations etc. Political and methodological development of solutions should go hand in hand. Once a political agreement has been reached on these issues the related methodological issues can be finalized.

OPTIONS FOR SHARING OF MITIGATION ACTION IN HOST COUNTRIES

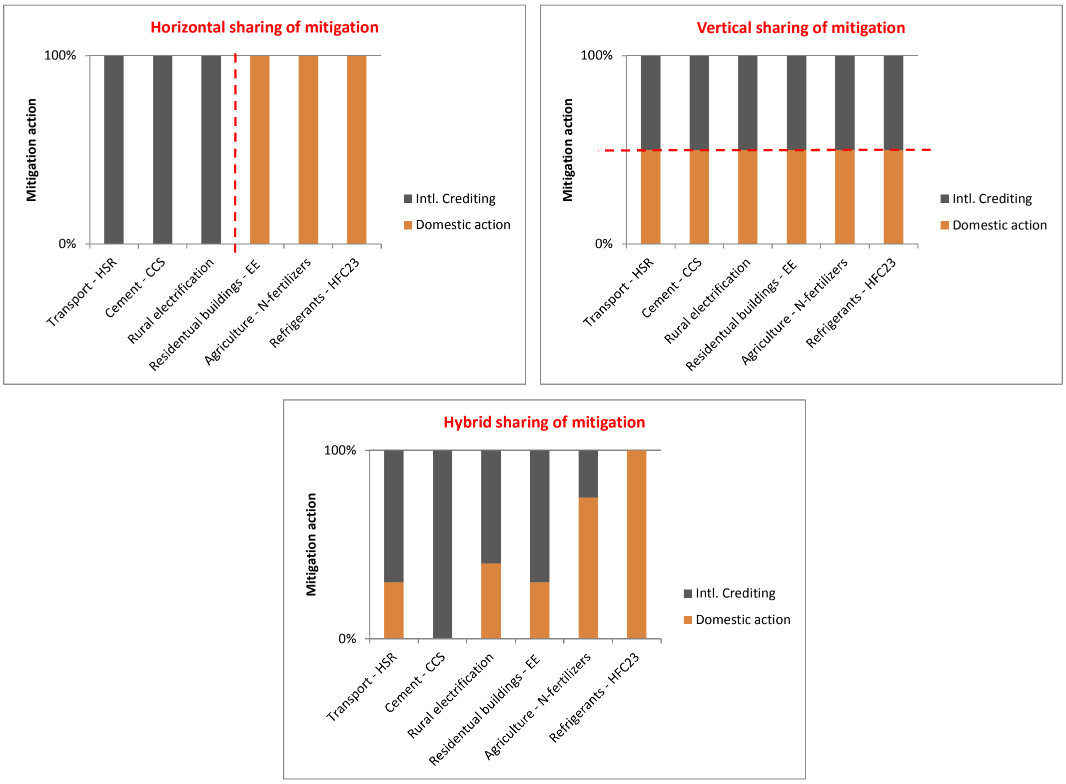

Figure 4 Three illustrations on how mitigation action in a non-Annex-I country could be shared between domestic action of the host country (with international and/or domestic financing) and internationally credited action financed by an Annex-I country that can use the credits towards its target. The provided examples and percentages are for illustrative purposes only. Source: INFRAS.

From a methodological point of view several approaches to sharing mitigation action between domestic action and international crediting can be explored (Figure 4):

› **Horizontal sharing** of sectors/technologies between domestic action (with domestic and/or international financing) and sectors for international action with crediting. Here the host country (DNA) pre-defines which on the level of sectors or technologies, which measures are to be implemented in the framework of domestic action and used towards the compliance with national targets or pledges. Domestic action may be financed by international and/or domestic finance sources. Other measures, potentially measures with higher needs in terms of investments or technology transfer, are defined as sectors/technologies for international crediting. The latter project types generate internationally transferrable emission reduction units (like CERs) that may be used by both Annex-I and non-Annex-I countries towards compliance with their targets or pledges.

- **Vertical sharing**: Here, sharing of mitigation action takes place within one production chain in a specific sector/technology. Host countries may claim the "low hanging fruits", i.e. measures within a sector that have lower marginal abatement cost for domestic compliance and leave more expensive measures or measures that require technology transfer to international crediting. Or, host countries may claim emission reductions above BAU up to an ambitious baseline for domestic action and leave efficiency improvements above the ambitious level to international crediting.
- **Hybrid approach**: In practice, there may well be a hybrid approach emerging: Host countries may claim some sectors in their entirety for domestic action or leave others fully for international crediting (horizontal sharing) while splitting other sectors up between domestic and internationally credited activities in a vertical sharing, depending on the specific characteristics of sectors in terms of national priorities, marginal abatement costs, needs for technology transfer.

Different approaches will probably been followed in different countries. The experience from CDM shows that it is rewarding to consider existing channels and sectors of ODA and direct foreign investment (DFI) for exploring synergies with international crediting mechanisms.

5. PRELIMINARY CONCLUSIONS

The following preliminary conclusions are drawn from this study:

- The CDM provides valuable tools and elements that can be used as a basis for the development of standardized approaches leading to up-scaled use under the CDM as well a valuable basis for New Market Mechanisms.
- The paper provides an illustrative overview on such tools and elements from the "conventional" CDM and how they may contribute to new standardized approaches.
- Examples include:
  - Tools for performance benchmark setting
  - Tools and approaches for additionality demonstration that go beyond project-by-project additionality testing and allow for upscaling
  - Numerous small tools and standards that allow e.g. the robust determination of the efficiency of a boiler or provide simplified default values for most technologies.
- E+/E- discussion appears to be stalling at the moment. However, the key issues of the relationship between domestic mitigation action and CDM will become even more relevant on the level

of up-scaled CDM and the New Market Mechanisms. In this context, the concept of ambitious baselines, that generate more emission reductions than are credited, might be expected to gain in importance. Future standardized approach to baseline setting may have to consider transparent procedures on how to negotiate and define the sharing of mitigation actions.

› On a methodological level, the biggest barrier towards standardization of approaches lies in the limited availability of data that would allow for the definition of performance benchmarks in host countries.

From this it may be concluded that the existing CDM elements and tools may significantly contribute to overcoming the methodological barriers for upscaling of CDM and New Market Mechanisms.

To put this study into context it should however be noted that overall, the biggest barrier towards large scale upscaling are probably not the methodological challenges, but the low ambitions of current emission reduction pledges and related low demand and low prices for CERs or anyfuture emission reduction units from NMM.

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ANNEX I APPROACHES TO THE CATEGORIZATION OF CDM METHODOLOGIES

This Annex provides three ways in which methodological approaches in the CDM are categorized. This serves as a background to Section 2 where methodological approaches are differentiated according to their approach towards baseline determination and additionality demonstration.

A. METHODOLOGY "FAMILY TREE" (UK DEFRA GUIDEBOOK 2007)

Categorization grouping methodologies "that deal with comparable technologies or measures". The following family trees are distinguished e.g.:

Examples

- Methodologies for renewable electricity
- Methodologies for renewable energy (thermal or mechanical energy)
- Methodologies for efficient or less-carbon-intensive fossil-fuel-fired power plants
- Methodologies for fuel switch
- Methodologies for biofuel
- Methodologies for industrial energy efficiency
- Methodologies for household & building energy efficiency
- Etc.

Sub-structure

Each family tree is further divided into applications, e.g.

- Family tree (e.g. Methodologies for renewable electricity)
  - Application (e.g. Biomass electricity, Grid electricity, Offgrid electricity, ...)

B. MITIGATION ACTIVITY TYPE (CDM METH BOOKLET)

This approach is broadly similar to the family tree approach and follows the categorization of methodologies according to the official UNFCCC scopes (which are e.g. also relevant in the context of the accreditation of DOEs). The scopes mirror roughly the source categories of IPCC guidelines for national inventories (IPCC 1996, 2001).

Examples

- 1 Energy industries (renewable-/non renewable sources)
- 2 Energy distribution
- 3 Energy demand

- 4 Manufacturing industries
- 5 Chemical industries
- 6 Construction
- Etc.

Sub-Structure
The UNFCCC sectoral scopes are further divided according to the following structure:

- Sectoral scope (e.g. Energy industries, Energy distribution, Energy demand, etc.)
    - Type of mitigation activity (e.g. displacement of more GHG intensive output, energy efficiency, fuel switch, ...)
        - Sector of application (Electricity generation and supply, Energy for industries, Transport, Housholds, ...)

C. CATEGORISATION ACCORDING TO OTHER CHARACTERISTICS

Size of CDM project

CDM differentiates Methodologies according to their size:

- Micro scale CDM project (RE <5MW, EE <20GWh/yr, other projects <20kt CO_2/yr)
- Small scale CDM project (Type I (RE) <15MW, Type II (EE) <60GWh/yr, Type III <60ktCO_2)
- Large scale CDM project

Country group

In order to promote the regional distribution of CDM projects, increasingly special (i.e. more "lenient") methodological rules are applied in some country groups:

- Least developed countries (LDCs) and small island developing states
- host countries with less than ten CDM projects (total 128)

ANNEX II METHODOLOGICAL “BRICKS AND TOOLS” FROM THE CDM

This Annex displays some of the important methodological “bricks and tools” that constitute the body of current baseline methodologies of the CDM mentioned in section 2. The (simplified) tabular overview lists important elements and tools for (A.) baseline determination and (B.) additionality demonstration.

A. OVERVIEW OF CDM BASELINE APPROACHES

BASELINE DETERMINATION APPROACHES		
Approach	**Level/ boundary**	**Description/Examples**
Historical performance on project site		
Historic emissions/ emissions factors	Project, region, country	E.g. for new high efficient super-critical coal fired power plants (ACM0013), the baseline emissions may be based on historic emissions of plants in the existing grid.
Historic efficiencies	Project	E.g. for the rehabilitation of power plants the baseline is defined by the historic efficiency of the plant (AM0019)
Historic clinker factor	Project, (region)	E.g. the methodology for increased blending of cement (ACM0005) requires the analysis of historic share of clinker in the project plant and in all plants in the relevant region.
Activity data, Cap on historic activity data	Project, region	Many methodologies cap the generation of CERs at historic activity levels to simplify the methodology, because for activity levels above the historic situation a new baseline (emission factor) would need to be defined. E.g. the methodology for the incineration of HFC 23 waste streams (AM0001) caps CERs inter alia at the level of historic HCFC-22 production in the project plant. An example of regional activity data is the methodology for the distribution of efficient light bulbs to households (AM0046). Here, a baseline sample group is established to determine the activity data (electricity consumption) of similar households in the region.
Nameplate performance		
Nameplate efficiencies		Nameplate efficiency is widely available from manufacturers documents and is often taken as a conservative estimate for existing baseline boilers, as efficiency tends to decrease over time, for instance in the methodology for avoided methane emissions from wastewater treatment (ACM0014).
Nameplate activity data (capacity)	Project, entire grid	E.g. the methodology for the distribution of efficient light bulbs to households (AM0035) uses the nameplate SF6 capacity of transformers, switches etc. in the grid system to determine baseline emissions.

BASELINE DETERMINATION APPROACHES		
Approach	**Level/ boundary**	**Description/Examples**
Default values		
Emissions/ Emissions factors/ net calorific value of fuels	Global, country group, country	Most methodologies allow the use of default values from the IPCC guidelines for greenhouse gas inventories (IPCC 1996, 2000, 2006) for the determination of net calorific values and emission factors for most fossil fuels. This greatly simplifies the application of methodologies in situation on very limited data availability on fuel characteristics.
Efficiencies	Global	Conservative baseline efficiencies for different types of boilers and fuels are e.g. provided in the methodology for the introduction of a new primary district heating system (AM0058).
Activity data	Global	Activity data is usually monitored in each project. However, there are exceptions e.g. where monitoring is too cumbersome compared to the size of the project activity. E.g. in the small scale methodology for demand-side activities for efficient lighting technologies (AMS-II.J.) a default operating time for baseline light sources of 3.5 hours per day may be used.
Other default factors from IPCC and other sources (e.g. clinker factor, flare efficiency, methane conversion factors, etc.)	Global, regional	The IPCC guidelines provide a tiered approach that allows for most emission sources the estimation on emissions based on very rudimentary data. It provides a wealth of default emission factors in the areas of energy extraction and generation, transport, solvents and fugitive emissions, agriculture, waste and AFOLU and other relevant areas. Many CDM methodologies allow the use of these default values in cases of limited data availability to estimate emissions. Often methodological provisions are given to ensure that the use of default values leads to conservative estimates. Some methodologies provide also default values from other scientific sources than IPCC, e.g. default emissions factors for cars based on an analysis of emissions factor databases.
Project type determines emission factor	Global	With the latest revision of the methodology for the incineration of HFC 23 waste streams (AM0001), the methodology in practical terms prescribes a baseline HFC-23 waste generation rate of 1%, because actual monitored waste generation rates go rarely below that value. This in effect leads to the simple approach one project type – one emission factor.
Operating and built margin approach		
Grid emissions factor	Regional grid, country	The *consolidated baseline methodology for grid-connected electricity generation from renewable sources* (ACM0002) in combination with the *tool to calculate the emission factor for an electricity system* has been the backbone of most renewable electricity generation projects for a long time. It estimates emission factor of the electricity that is displaced by the new renewable power plant. For this it combines the characteristics of the existing grid and its operation (operating margin) with a simplified outlook of the characteristics of plants that would have been built in absence of the CDM project (built margin). The result-

BASELINE DETERMINATION APPROACHES		
Approach	**Level/ boundary**	**Description/Examples**
		ing combined margin provides a measure on how many grams of CO_2 are saved by the generation of one kilowatt-hour of renewable electricity.
Reference system or modelling of baseline		
Reference plant	Project	The concept of a reference plant is introduced e.g. in the methodology for (ACM0006). Here, the reference plant describes *commonly installed new biomass residue fired power plants*, i.e. the plant that represents common practice in the region. The challenge in this approach lies in the adequate documentation of the choice of the reference plant's efficiency in the PDD.
Simulation software for baseline determination	Project	The use of simulation software to model flows of energy and mass in the baseline situation has been long discussed but has not gained wide acceptance because of issues of transparency and gaming potential. However, e.g. the methodology for the installation of high voltage direct current power transmission line (AM0097) is one of the remarkable exceptions in large scale CDM. In this methodology, the simulation software is used to calculate the technical losses in the (less efficient) baseline power transmission line. In small scale CDM, the methodology for *solar water heating systems* (AMS-I.J.) allows under certain conditions for the use of an *approved, computerized simulation model* for the determining baseline emissions.

BASELINE DETERMINATION APPROACHES		
Approach	**Level/ boundary**	**Description/Examples**
Current performance		
Control group approach	City, region	One way of solving the issue of building a counterfactual baseline is the control group approach. E.g. in the methodology for energy efficiency technologies and fuel switching in new buildings (AM0091), a group of similar buildings that are not part of the project are monitored over the project lifetime as a proxy to the fuel consumption and emissions from the project buildings would to be expected in absence of the project. Although methodologically very elegant, control group approaches require rather high resources for monitoring.
Survey to determine baseline emissions factor	City	In some methodologies for the promotion of efficient public transport systems (e.g. ACM0016, AM0031, AM0101) a random sample of passengers is asked in a survey what mode of transport (car, motorcycle, bus, etc.) they would have used in absence of the new transport system of the project. Based on the results of the survey, the baseline emissions are calculated. In other sectors, surveys form an integral part of the control group approach for baseline determination. Examples include energy eficiency in housing (AM0091), biomass stoves/heaters (AM0094), water purification (AM0086), etc.
Benchmark baseline	Region, country	Benchmark approaches in CDM methodologies set baseline emissions on the basis of performance benchmark of the entire sector in a given country or region: The benchmark threshold is often defined at the average of the 20% top performers (as stipulated by para 48c of the Kyoto protocol) or at other stringency levels (e.g. at 15% in the methodology for ultra-supercritical coal power plants ACM0013). Examples include the large scale methodologies for refrigerating appliances (AM0070), power generation (AM0013) and cement (ACM0005 and NM0302).
Autonomous technical development (ATD)	Country	The concept of autonomous technical development takes the continuous technical improvement of technologies by the manufacturers into account which takes place also in absence of the CDM. E.g. the methodology for the manufacturing of energy efficient domestic refrigerators (AM0070) takes into account the autonomous technical improvement of the refrigerator's efficiency over the years. Similar approaches are used e.g. in the transport sector for gradually increasing fuel efficiency of vehicles (ACM0016, AM0031).

BASELINE DETERMINATION APPROACHES		
Approach	**Level/ boundary**	**Description/Examples**
Conservativeness and uncertainty		
Principle of conservativeness	Global	The principle of conservativeness becomes relevant in all situations where data availability is limited or where data (and model) uncertainties are high. The Kyoto Protocol requires the conservativeness of baselines[9]. This means that if several values of parameters are available from different sources or because of data or model uncertainty, the value that leads to the lowest emission reductions should be used.
Applicability of methodology		
Applicability conditions		The applicability conditions describe in detail which conditions a CDM project needs to fulfil in order to be eligible to use the methodology. Well-designed applicability conditions are an important element to keep the methodologies short and user friendly.

Table 1

Another part of methodological tools directly facilitates the calculation of emission factors, once the baseline scenario has been selected. These tools include generic approaches to emissions estimation and provide often options for different levels of data availability. The tools may be used as robust brick stones for the build-up of standardized approaches.

9 3/CMP.1, Annex, paragraph 45(b) requires that baselines be 'transparent and conservative': *A baseline shall be established: ... In a transparent and conservative manner regarding the choice of approaches, assumptions, methodologies, parameters, data sources, key factors and additionality, and taking into account uncertainty* (3/CMP.1, Annex, paragraph 45(b)).
The EB has further clarified that 'conservative' means: *In case of uncertainty regarding values of variables and parameters, the establishment of a baseline is considered conservative if the resulting projection of the baseline does not lead to an overestimation of emission reductions attributable to a CDM project activity (that is, in the case of doubt, values that generate a lower baseline projection shall be used)* (CDM Glossary of Terms, Version 03).

TOOLS TO CALCULATE EMISSION FACTORS		
Approach	**Level/ boundary**	**Description/Examples**
Tool to calculate project or leakage CO_2 emissions from fossil fuel combustion	Project	This widely referenced tool is used in most methodologies that involve fuel combustion in the project.
Emissions from solid waste disposal sites	Project	This tool is relevant to calculate baseline emissions for projects that reduce landfill emissions by using other means of waste disposal or that use or flare landfill gas.
Tool to calculate baseline, project and/or leakage emissions from electricity consumption	Project, grid	This widely referenced tool is used in most methodologies that involve electricity consumption in the project.
Tool to determine project emissions from flaring gases containing methane	Project	This tool helps to calculate project emissions from flaring of gases (e.g. methane). This is relevant because flaring does not always reduce methane emissions by 100%.
Tool to calculate the emission factor for an electricity system	Project, grid	This widely referenced tool is used in most methodologies that involve electricity generation/consumption.
Tool to determine the mass flow of a greenhouse gas in a gaseous stream	Project	This is a rather technical tool for mass flow determination.
Tool to determine the baseline efficiency of thermal or electric energy generation systems	Project	This widely referenced tool is used in most methodologies that include the operation of boilers and power generation from fuels in the baseline.
Tool to determine the remaining lifetime of equipment	Project	The crediting period of CDM projects may not go beyond the remaining lifetime of baseline equipment. This widely referenced tool is used in most methodologies to determine the remaining lifetime of baseline equipment.
Tool for project and leakage emissions from road transportation of freight	Project	This tool provides simplified approaches and default factors for the calculation of (smaller) emissions from road transportation in non-transport projects, e.g. from the transportation of biomass on trucks in biomass projects.
Project and leakage emissions from composting	Project	This tool provides emission calculations for emissions from projects with a composting component, e.g. biomass digesters with composting of digester residues.

Table 2

B. OVERVIEW OF CDM ADDITIONALITY APPROACHES

APPROACHES TO ADDITIONALITY DETERMINATION		
Approach		**Description/Examples**
Additionality tool	Project	The additionality tool provides a step by step guidance on how to demonstrate that the proposed project would not be implemented in absence of the CDM. The following are its key elements
Barrier analysis (Part of AT/CT)	Project	This step is used to demonstrate that the project would not be implemented in absence of the CDM because of barriers (e.g. lack of access to finance, technical barriers, etc.)
Investment analysis (Part of AT/CT)	Project	This step is used to demonstrate that the project would not be implemented because it is not financially or economically attractive for the project participant (e.g. the project internal rate of return is below the relevant hurdle rate).
First of its kind (Part of AT/CT)	Country, region	This step assumes that a project is automatically additional if it is the first of its kind in a given country or region.
Common practice analysis (Part of AT/CT)	Country, region	This step checks if a proposed project is common practice compared with other plants under similar circumstances. Only a project that not common practice is additional.
Impact of CDM ("Old step 5")	Project	In this step it has to be demonstrated how the CDM *will alleviate the economic and financial hurdles* (Investment Analysis) *or other identified barriers* (Barrier Analysis) *and thus enable the project activity to be undertaken*. The „old step 5" was part of the Additionality Tool in its two first versions and was subsequently removed by the EB (EB 29, February 2007).
Combined tool	Country, region	The Combined toll combines the procedure of the baseline determination with the additionality demonstration.
Additionality by benchmark	Country, region	With this approach, projects that reduce emissions below a performance benchmark are deemed additional. Examples include manufacturing of energy efficine refrigerators (AM0070) and supercritical coal power (ACM0013)
Additionality by default	Global	In the methodology for the destruction of the HFC23 waste gas from the production of refrigerants (AM0001v6) projects are deemed automatically additional (HFC23 destruction)
Impact approach	Project	In projects, where investment decisions are mainly taken by public sector entities it has to be demonstrated that the financial contribution from CERs have a significant impact on project finance. This impact approach shows similarities to the "old step 5" of the additionality tool and is implemented in methodologies for public transport systems (ACM0016, AM0031, AM0101).
Positive list of technologies and size	Global, country, region	Positive lists define technologies7project types that are automatically additional. Microscale project activities up to 5 MW that employ renewable energy technology are under certain conditions deemed automatically additional (EB63a23). In small scale CDM grid connected renewable power generation projects below 15MW in the solar, off-shore wind, wave and tidal technologies are deemed automatically additional (EB63a24)..

Table 3

ANNEX III "E+/E-" – HOW TO DEAL WITH NATIONAL POLICIES?

As a background to section 4, this Annex provides an overview on COP/MOP and CDM-EB ruling on the treatment of national policies and regulations in the context of CDM project baseline setting (A), on the requirements of the Additionally tool (B) and illustrate some of the main issues with this ruling in a few examples (C).

A. M&P, EB13, EB16 AND EB22 RULING AND DEFINITION OF E+/E- POLICIES

The CDM Modalities and procedures in the Marrakesh Accords require:

A baseline shall be established: […] Taking into account relevant national and/or sectoral policies and circumstances, such as sectoral reform initiatives, local fuel availability, power sector expansion plans, and the economic situation in the project sector.

In order to clarify how *relevant national and/or sectoral policies and circumstances* have to be taken into account, the CDM Executive Board (EB) provided the following guidance in several meetings:

- In **EB13**, the Board agreed to clarify that the national and(or sectoral policies and circumstances are to be taken in to account on the establishment of a baseline scenario, without creating perverse incentives that may impact host Parties' contributions to the ultimate objective of the Convention [i.e. climate change mitigation].
- **EB22** differentiates between policies or regulations that increase GHG emissions, *E+,* and policies or regulations that reduce GHG emissions, *E-* policies (see box). It clarified that for Type E+ policies only those policies implemented before 11 December 1997 can be taken into account when developing the baseline scenario:
  Only national and/or sectoral policies or regulations under paragraph 6 (a) that have been implemented before adoption of the Kyoto Protocol by the COP (decision 1/CP.3, 11 December 1997) shall be taken into account when developing a baseline scenario. If such national and/or sectoral policies were implemented since the adoption of the Kyoto Protocol, the baseline scenario should refer to a hypothetical situation without the national and/or sectoral policies or regulations being in place. (EB 22, Annex 3, paragraph 7(a)).
  EB22 clarified similarly that for Type E- policies, only those policies or regulations implemented before 11 November 2001 need to be taken into account when developing the baseline scenario:
  National and/or sectoral policies or regulations under paragraph 6 (b) that have been imple-

mented since the adoption by the COP of the CDM M&P (decision 17/CP.7, 11 November 2001) need not be taken into account in developing a baseline scenario (i.e. the baseline scenario could refer to a hypothetical situation without the national and/or sectoral policies or regulations being in place) (EB 22, Annex 3, paragraph 7(b)).

Box 1: Definitions of E+/E-

Definitions from EB22, Annex 3 *Clarification on the consideration of national and/or sectoral policies and circumstances in baseline scenarios* (Version 2).

› **E+ policy** (that increases GHG emissions): *National and/or sectoral policies or regulations that give comparative advantages to more emissions-intensive technologies or fuels over less emissions-intensive technologies or fuels*;
› **E- policy** (that decreases GHG emissions*): National and/or sectoral policies or regulations that give comparative advantages to less emissions-intensive technologies over more emissions-intensive technologies (e.g. public subsidies to promote the diffusion of renewable energy or to finance energy efficiency programs)*.

Box 2: Definitions of terms *policies* and *regulation*

The terms *policies* and *regulations* are not defined in the CDM Glossary of Terms (v.5). In the annotated agenda to EB27 (Annex 1), the following definition has been proposed by the secretariat:

› *A "**policy**" is a statement of intent to achieve certain goal(s) by a local, regional or national governments of a country. A policy could be documented in legislation or other official documents.*

Please note that this definition has **never been approved by the EB**.

The Annex also distinguishes different levels of implementation:

(i) the statement of goal or objective (e.g. 13% renewable mix in electricity generation);
(ii) translation of the stated intent into law and creation of necessary institutional structure for implementation to achieve the policy goal (e.g. regulation for utilities to buy renewable electricity and a system to monitor implementation and enforce penalties); and
(iii) actions by actors to achieve the goal (e.g. creation of renewable power generation capacity by private/public sector).

Another issue raised in the context of definition of policy was that of **enforcement** of the policy: Even *though a legal basis of enforcing a policy might exist, it may not be strictly enforced.*

In the context of defining the CDM Programme of Activities, the CMP 1 decided that *a local/regional/national policy or standard cannot be considered as a clean development mechanism project activity* [...].

From this one might concur that when defining baseline scenarios, E- polices and regulations such as subsidies or feed in tariffs implemented after 11.11.2001 do not need to be taken into account. However, this appears to be in contradiction to the decision in CMP 1 and the provisions in the additionality tool and the combined tool.

B. REQUIREMENTS ON BASELINE SETTING OF ADDITIONALITY AND COMBINED TOOL

Regarding the above cited guidance on E+/E-, the additionality tool (AT) as well as the related combined tool provides the following guidance:

› The AT (v.6) requires that considered project alternatives ...*shall be in compliance with all mandatory applicable legal and regulatory requirements, even if these laws and regulations have objectives other than GHG reductions, e.g. to mitigate local air pollution.*
  This seems to be in contradiction to the requirements of EB22 that state that E- policies implemented after 11.11.2001 do not need to be taken into account.
› In the context of Investment Analysis, the AT (v.6) requires*: Include all relevant costs [...], and revenues (excluding CER revenues, but possibly including inter alia subsidies/fiscal incentives,*[11] *[...]).* As subsidies and fiscal incentives for mitigation activities may be considered E-policies, this may be in contraction to EB22 ruling, therefore a footnote has been added to clarify with "*See EB guidance...*" that EB22 rulings still apply.

In the view of many observers, there is a clear contradiction between the provisions of the additionality/combined tool on the one hand and the guidance of the CDM-EB on E+ and E- issues on the other hand.

This view is also mirrored in a Working paper for policy discussion by the secretariat for EB52[10]. For EB55, the secretariat prepared a *Draft guideline on the treatment of national and sectoral policies in the demonstration and assessment of additionality*[11]. This draft basically proposes to bring the AT in line with the EB22 ruling, by adjusting step 1 of the tool, proposing to restrict the test of the consistency of the identified alternatives with only laws and regulations that are not related to E+ policy introduced after 11. 12. 1997 or E- policy introduced after 11.11.2001.

In EB55 the Board considered the draft guidelines *and agreed not to continue the consideration of the treatment of national and sectoral policies in the demonstration and assessment of additionality.* From now on this should be *assessed on a case by case basis*.

For many observers, this conclusion was rather surprising, as it seems that the EB intends to stop its discussion on an open key issue of additionality demonstration.

C. EXAMPLES OF THE IMPACT OF NATIONAL OR SECTORAL POLICIES

In the following, we illustrate some of the main issues with this ruling in a few examples.

Example 1: A host country puts into force and implements a mandatory energy efficiency standard for new buildings in 2010 ("2010 standard") and puts with it a system for its enforcement in place (e.g. control and fines). After that, a project participant (PP) requests the registration of a CDM PoA that promotes the implementation of new buildings according to the 2010 standard.
Discussion: The

- According to EB22, implementation of a mandatory energy efficiency standard can be considered an E- policy. The policy would not need to be taken into account when defining the baseline. The PP would select a baseline in line with pre-2010 standards and could claim the resulting efficiency gain in terms of CERs.
- According to the AT, the 2010 standard would be part of the *mandatory applicable legal and regulatory requirements* that are actually enforced. Therefore, implementing a new building with an energy efficiency level below the 2010 standard would not be legal and therefore not a valid project alternative.

Here, the two rulings are clearly in conflict with each other. In practice, the project would probably not be registered because if the requirements in the AT.

10 See http://cdm.unfccc.int/EB/052/eb52annagan3.pdf
11 See http://cdm.unfccc.int/EB/055/EB55_propan07.pdf

Example 2a: A host country provides higher feed-in tariffs for renewable electricity (e.g. wind, biomass) than for fossil electricity generation. After that, a PP requests the registration of a CDM wind project.

Discussion: The EB debated if higher feed-in tariffs for renewables are the same as *public subsidies* and therefore constitute an E- policy.

› If one assumes this to be the case, then EB22 would require the baseline to assume no higher feed-in tariffs for wind, and the project would be additional.
› On the other hand the AT would require considering the subsidies in the Investment Analysis while taking "*EB guidance*" into account which is a bit of a contradiction.

In practice, it seems that wind projects take into account actual feed in tariffs in their Investment analyses (or the highest documented feed in tariff in the region for reasons of conservativeness.)

Example 2b: A host country has higher feed-in tariffs for renewable electricity (e.g. wind, biomass) than for fossil electricity generation and then decides to decrease this tariff. After that, a PP requests the registration of a CDM wind project.

Discussion: This actually happened in early 2010 with Chinese wind and later hydro projects and lead to the broad discussion of the E+/E- issue in the EB: In the registration process, it appeared that some wind projects received a lower feed in tariff than other wind projects that were registered earlier in the same province. At the centre of the discussion was the assumption that a host country might not keep their subsidies for renewables constant (see Figure 5) but may purposely lower their feed in tariffs to adjust for additional subsidies from the CDM (Figure 6). From an economic point of view, lowering subsidies in response to other revenues increases the efficiency of subsidies and seems rational. On the other hand, it might be assumed that without the CDM, the Chinese government would not have reduced their feed in tariffs for wind, which puts the additionality of the projects into doubt.

For many wind projects, the issue was solved on a technical level, as PPs used a calculated "Reference tariff" to prove additionality or demonstrate that the projects are also additional assuming the highest available feed-in tariff in the region in order to be conservative.

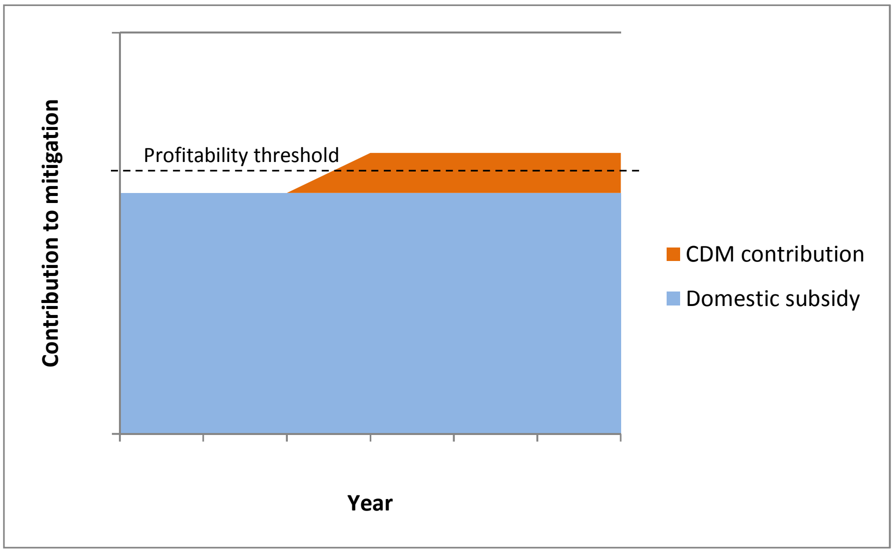

Figure 5 Contribution of domestic subsidy and of CDM revenues to bridge the profitability gap for renewable CDM projects with constant domestic subsidy. This example looks at a subset of renewable projects that were not profitable without the CDM and became only profitable with the availability of the financial contributions from the CDM.

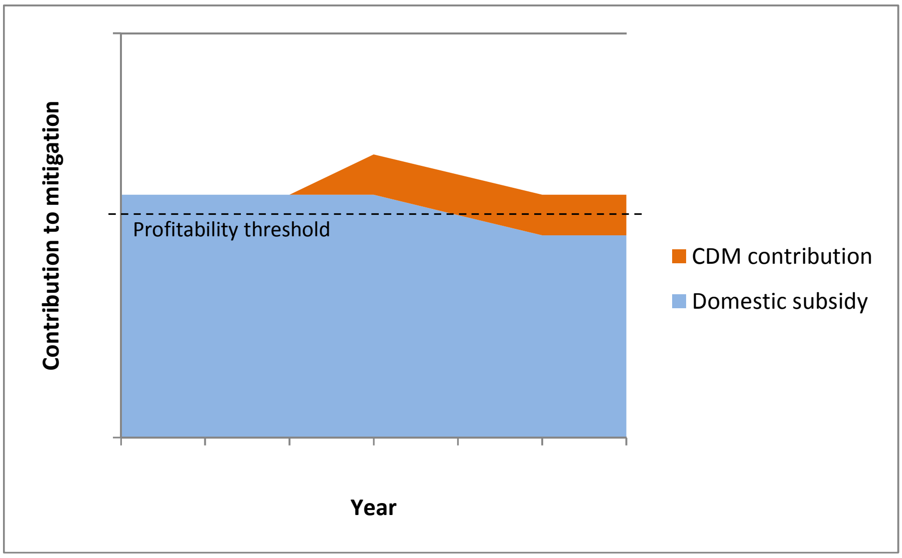

Figure 6 In this example, the renewables project type considered is already profitable from the onset because of domestic subsidies from the host country. The availability of other financial contributions from the CDM led to an adjustment of domestic subsidies by the regulator. In fact the CDM contribution effectively replaces the subsidy from the host country and no additional resources for mitigation action are available for this project type, putting into question its additionality.

From a regulatory perspective, the examples highlight not only the inconsistencies in the present CDM guidance and the difficulties of the existing project-by-project approach to adequately deal with national policies and regulations for GHG mitigation. Looking beyond the first commitment period and into the concept of Nationally Appropriate Mitigation Actions (NAMA), the clarification of the relationship between domestic action (subsidies, feed in tariffs,...) and credited activities (CDM-PoAs-type of activities, crediting NAMAs, etc.) will become even more important.