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Implications of Standardized CDM Baselines for Least Developed Countries (LDCs) and their Use in National 'Measuring, Reporting and Verification (MRV)'-Systems

Final Report

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Implications of Standardized CDM Baselines for Least Developed Countries (LDCs) and their Use in National 'Measuring, Reporting and Verification (MRV)'-Systems

Final Report

by

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Kurzbeschreibung

Um die Entwicklung standardisierter Baselines unter dem Clean Development Mechanism (CDM) zu befördern, hat das Umweltbundesamt 2012 das Wuppertal Institut und GFA Consulting Group beauftragt, eine Studie über die Auswirkungen standardisierter Baselines auf die am wenigsten entwickelten Länder (Least Developed Countries, LDCs) und eine Nutzung in nationalen MRV-Systemen durchzuführen. Die Arbeiten teilten sich in zwei Arbeitspaketen auf: im Ersten wurde eine Fallstudie durchgeführt, die die Nutzung standardisierter Baselines im Bereich ländliche Elektrifizierung in LDCs untersuchte. Diese Studie baut auf der genehmigten CDM-Kleinprojektemethode AMS I.L 'Electrification of rural communities using renewable energy' auf. Die Untersuchung zeigt mögliche Standardisierungen eines Programms zur ländlichen Elektrifizierung in Äthiopien auf. In einem schrittweisen Ansatz wurden nationale Standardfaktoren für Haushaltsbeleuchtung im ländlichen Raum, weitere Haushaltsanwendungen sowie anderer, nicht-haushaltsbezogener Verbraucher ermittelt.

Im zweiten Arbeitspaket führte das Projektteam qualitative Interviews mit Experten durch. Die Interviews fokussierten auf die Leitlinien für die Entwicklung sektorspezifischer Standardized CDM Baselines und deckten Themen ab wie die Entwicklung von Positivlisten und deren Anwendung auf CDM-Projekte, die Qualitätssicherungsregeln, sowie die Koordinierung der Aktivitäten und Interessen im Bereich der Standardisierten Baselines. Die Ergebnisse der Interviews und der Fallstudie wurden systematisiert, bewertet und flossen in ein Diskussionspapier ein, das den Titel trägt 'Recommendations on the Advancement of the CDM Standardized Baselines Framework'. Dieser Bericht diskutiert zentrale Fragestellungen, die die Interviewpartner aufgeworfen haben, sowie das Datenmanagement und die Datenqualität, die die UN-Regeln fordern. Der Bericht thematisiert schließlich die Leitlinien zum Suppressed Demand. Er schließt mit einer Zusammenfassung und Empfehlungen zur Weiterentwicklung der Standardized Baselines.

Abstract

To support the development of CDM Standardized Baselines, the German Federal Environmental Agency commissioned the Wuppertal Institute and GFA Consulting Group in 2012 to investigate implications of SBs on least developed countries (LDCs) and their utilization in national MRV systems. The work consisted of major work packages: in the first, a case study was conducted to make the case for the utilization of SB CDM to promote rural electrification in LDCs. This study is based on the Approved Small Scale Methodology (AMS) I.L 'Electrification of rural communities using renewable energy'. The study sketches a possible standardized emission factor for a rural electrification program in Ethiopia. In a stepwise approach, national default emission data were derived for rural household lighting, other household electrical appliances and for electricity consumption by other (i.e. non-household) consumers.

As a second work package, the project team conducted a series of qualitative expert interviews. The interviews focused on the Guidelines for the development of sector-specific Standardized CDM Baselines covering topics such as the development of a positive list and its application in CDM projects, the QA/QC requirements, as well as the coordination of activities and interests with respect to the development of SBs. The findings from the interviews and the case study on rural electrification were systematized and evaluated leading to a research report entitled 'Recommendations on the Advancement of the CDM Standardized Baselines Framework'. This report discusses key issues raised by the interview partners. Further topics include data management and data quality requirements stipulated in the QA/QC Guidelines as well as the Suppressed Demand Guidelines. The report concludes by

summarizing the main results and deriving recommendations for the further development of Standardized Baselines.

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List of Abbreviations

AMS	Approved Small Scale Methodology
CER	Certified Emission Reductions
CDM	Clean Development mechanism
CMP	Conference of the Parties serving as The meeting of the Parties to the Kyoto Protocol
DNAs	Designated National Authorities
DOE	Designated Operational Entity
EB	Executive Board
FAO	Food and Agriculture Organization of the United Nations
GEF	Global Environment Facility
GHG	Greenhouse Gases
HH	Household
kWh	Kilowatt hour
LDCs	Least Developed Countries
MSL	Minimum Service Level
MRV	Measuring, Reporting and Verification
MWh	Megawatt Hour
NAMAs	Nationally Appropriate Mitigation Actions
NMM	New Market Mechanism
PoA	Programmes of Activities
QA/QC	Quality Assurance / Quality Control
RCCs	Regional Collaboration Centres
SBs	Standardized Baselines
SD	Suppressed Demand
SSC WG	Small Scale Working Group
UN	United Nations
UNDP	United Nations Development Programme
UNFCCC	United Nations Framework Convention on Climate Change
WHO	World Health Organization

Zusammenfassung

Das Konzept der standardisierten Baselines wurde 2010 durch die 6. Vertragsstaatenkonferenz des Kyoto-Protokolls in den CDM eingeführt. Seitdem hat das CDM Executive Board (EB) eine Reihe von Richtlinien und Verfahren erarbeitet, die die Entwicklung der Standardisierten Baselines (SBs) und deren Anwendung in CDM-Projekten regeln.

Erste Erfahrungen mit dem Konzept sind mittlerweile vorhanden. 20 SBs sind bisher vorgeschlagen worden, vier davon wurden genehmigt. Trotzdem sind bisher noch keine CDM-Projekte eingereicht worden, die die SBs tatsächlich nutzen. Dies hat sicher mit der derzeitigen Krisensituation auf den Kohlenstoffmärkten zu tun; ein weiterer Faktor mag aber auch die Tatsache sein, dass das SB-Regelwerk derzeit noch in der Entwicklung ist.

Um diese Entwicklung zu unterstützen, hat das Umweltbundesamt das Wuppertal Institut und die GFA Consulting Group 2012 beauftragt, die Auswirkungen von SBs auf wenig entwickelte Länder (*least developed countries*, LDCs) und den Nutzen für nationale „Messung, Berichterstattung und Verifizierungs (MRV)"-Systeme zu untersuchen.

Das Forschungsprojekt bestand aus drei Arbeitspaketen: In einer Fallstudie untersuchte das Projektteam die Möglichkeiten von SBs, um die ländliche Elektrifizierung in LDCs voranzubringen (AP 1). Im zweiten Arbeitspaket führte das Projektteam eine Reihe qualitativer Experteninterviews durch. Diese fokussierten auf das EB-Regelwerk zu sektorspezifischen SBs, die Qualitätssicherungsrichtlinien sowie die Koordinierung von Aktivitäten und Interessen mit Blick auf die Entwicklung von Standardized Baselines. Die Ergebnisse aus Fallstudie und Interviews wurden in einem Report systematisiert und evaluiert (AP 3). Schließlich entwickelte das Projektteam Empfehlungen für zukünftige Forschungsvorhaben.

Das Arbeitspaket 1 untersucht dementsprechend Optionen für die Standardisierung von Baseline-Emissionsfaktoren mit besonderer Berücksichtigung von *suppressed demand*. Die CDM-Methode AMS I.L 'Electrification of rural communities using renewable energy' (UNFCCC 2014a) besitzt bereits ein hohes Maß an Standardisierung und wurde deshalb vom UBA ausgewählt, um das Potential von SBs in dieser Hinsicht zu testen. Diese Entscheidung fußte auf einer Vorstudie, die diese Möglichkeiten am Beispiel Äthiopiens auslotete. Diese Studie zeigt, dass die Berücksichtigung von suppressed demand innerhalb von SBs nicht nur dafür sorgt, dass die Baseline für ein spezifisches Land angepasst werden kann, sondern dies erhöht auch die Baseline-Emissionen. In der Folge führt dies zu größeren Ausschüttungen an Certified Emissions Reductions (CERs) und einer besseren finanziellen Attraktivität der Klimaschutzvorhaben.

AMS I.L bietet wie erläutert ein hohes Maß an Standardisierung. Zudem ist *suppressed demand* im methodischen Ansatz inhärent integriert. Unter der Annahme eines Elektrizitätsverbrauchs von 500 kWh pro Jahr und Haushalt führt dies zu 0,878 CERs pro Haushalt und Jahr. Wir folgen daraus, dass AMS I.L signifikante Emissionsreduktionen verglichen etwa mit durschnittlichen Netzemissinsfaktoren bietet. Dennoch bietet der gewählte Ansatz weitere Möglichkeiten der Standardisierung:

- Diese können etwa erreicht werden durch eine stärkere Berücksichtigung von suppressed demand, nicht zuletzt durch ein definiertes *minimum service level* von 1.746 lumen pro Haushalt. Unter Nutzung von verfügbaren Daten zu Beleuchtungstechnologien in Äthiopien wurde ein standardisierter Emissionsfaktor für Haushaltsbeleuchtung von 9,1 t CO2/MWh errechnet.

- Darüber hinaus untersuchten wir den typischen Lastenfaktor bzw. Ausnutzungsgrad für nicht netzgebundene Dieselgeneratoren. Es zeigte sich, dass die Annahmen der Small Scale Working Group des CDM EB zu einer Nennleistung (in MW) führten, die die Spitzennachfrage nicht deckt. Die Nutzung größerer Nennleistungen führt zu geringeren durchschnittlichen Auslastungsfaktoren und höheren Emissionsfaktoren. Die Benutzung höherer Werte führt zu Emissionsfaktoren von 1,9 tCO2/MWh für den Elektrizitätsverbrauch von Haushalten sowie 1,3 tCO2/MWh für "andere Verbraucher". Dieser standardisierte Ansatz erhöht die Baseline-Emissionen um 26,5 % (unter Annahme eines Elektrizitätsverbrauchs von 500 kWh/Jahr/Haushalt).

In Summe führt die Standardisierung unter Berücksichtigung von suppressed demand zu einer Erhöhung des Baseline-Emissionfaktors um 36,1 %.

Die ökonomische Analyse der Einnahmen durch den Zertifikatsverkauf zeigt, dass ein derartiges CDM-Programm substanziell zur Finanzierung ländlicher Elektrifizierung beitragen kann. Nachdem die CDM-Transaktionskosten und die Kosten eines Elektrifizierungsprogramms für den ländlichen Raum abgezogen wurden, ergeben sich diskontierte Erlöse von 3,35 Mio. € (basierend auf 6 USD/CER und eine jährlichen Verzinsung von 14,5%). Trotz niedriger CER-Preise und höhen Zinssätzen kann dies signifikante Beiträge zu den Kapitalkosten von Elektrifizierungsprogrammen (ca. 25%) ausmachen, die bspw. vergünstigte Zinssätze finanzieren könnten. Allerdings muss berücksichtigt werden, dass der Kohlenstoffmarkt derzeit durch niedrige Preise gekennzeichnet ist und die Zukunft von Klimaschutzprojekten in LDCs mit politischen Unsicherheiten behaftet ist.

Die Erkenntnisse der Fallstudie wurden in einem Bericht zusammengefasst mit dem Titel "Standardized Baselines and their Implications for a National Monitoring, Reporting and Verification System – A Case Study for Rural Electrification in Sub-Saharan Africa", der unter folgendem Link abrufbar ist: http://www.umweltbundesamt.de/sites/default/files/medien/378/publikationen/annex_i_standardized_baselines_and_their_implications_for_a_national.pdf. Zudem wurden die Ergebnisse in einem Folgeprojekt des UBA aufgegriffen, das eine konkrete standardisierte Baseline für ländliche Elektrifizierung in Äthiopien entwickelt. Diese Baseline wurde vom gleichen Konsortium erarbeitet und wird derzeit vom UN Klimasekretariat evaluiert, siehe https://cdm.unfccc.int/methodologies/standard_base/new/sb8_index.html

Die Untersuchung der derzeitigen Verfahren zur Genehmigung von SBs zeigte, dass zahlreiche Qualitätschecks durchlaufen werden müssen, bevor das EB die SB genehmigt. Es wird deshalb angenommen, dass die bestehenden Vorgaben und Verfahren die systematische Überbewertung der Baselineemissionen ausschließen. Auf der anderen Seite könnten diese Vorgaben eine substanzielle Barriere für die lokalen Genehmigungsbehören (DNAs) darstellen, SBs zu entwickeln. Es erscheint fraglich, ob die DNAs, die ohnehin nur über sehr begrenzte personelle und finanzielle Ressourcen verfügen, ohne die Unterstützung aus Annex-I.-Ländern SBs entwickeln können. Fortgeschrittene Nicht-Annex-I.-Staaten mögen dies schultern können; allerdings würden gerade LDCs am meisten von standardisierten Baselines mit Berücksichtigung von suppressed demand profitieren.

Die Untersuchung von Synergien zwischen SB-Entwicklung und nationalen MRV-Verfahren zeigte:

- SB-bezogene Daten sind nicht notwendigerweise für MRV-Systeme verwendbar, da sie möglicherweise einen Emissionstrend und/oder Baseline-Emissionen beinhalten, die auf suppressed demand basieren.

- Aus Sicht des Kapazitätsaufbaus bieten sich jedoch signifikante Synergien. Die Entwicklung von SBs kann das lokale Expertenwissen zu Tier 2- und Tier 3-Daten erweitern, welches auch für die Erarbeitung der nationalen Treibhausgasinventare benötigt wird.

SBs erleichtern nicht nur die Entwicklung von CDM-Projekten und *Programmes of Activities* (PoA). Sie können auch die Entwicklung zukünftiger marktbasierter Instrumente wie NAMAs und sektoraler Mechanismen unterstützen. Denn SBs können als nationale *business-as-usual*-Treibhausgasszenarien angesehen werden, die als Baseline für neue, innovative Klimafinanzierungsinstrumente genutzt werden können. Vor diesem Hintergrund können SBs eine Brücke bilden zwischen den methodischen Ansätzen und Verfahren des CDM und den neuen Marktmechanismen.

Experteninterviews

Dieses Arbeitspaket umfasste zehn Interviews mit Experten aus dem Bereich CDM und standardisierte Baselines. Die Interviews deckten fünf Themenbereiche ab:

1) Entwicklung einer Positivliste und deren Anwendung in CDM-Projekten
2) Qualitätssicherungsfragen
3) Die Koordinierung von Aktivitäten und Interessenslagen im Kontext der SB-Entwicklung
4) Supressed demand und SBs
5) Die Nutzung von SBs jenseits des CDM, also für neue Marktmechanismen

Die Interviews thematisierten die Einschätzung der Interviewpartner mit Blick auf die geeignete Balance zwischen dem Sichern der ökologischen Integrität durch strenge Schwellenwerte auf der einen und dem Sichern von ausreichenden Anreizen für Investitionen auf der anderen Seite.

In seiner 'Guideline for the Development of Sector-Specific Standardized Baselines' (UNFCCC 2011) hat das CDM EB vorläufige Zusätzlichkeits- bzw. Kreditierungs-Schwellenwerte von 80% in prioritären und 90% in allen anderen Sektoren festgelegt. Das bedeutet, dass Technologien/Kraftstoffe bzw. Grundstoffe für die Energieversorgung in absteigender Folge entsprechend ihrer Emissionsintensität gerankt werden können. Diejenige Technologie bzw. derjenige Kraft-/Grundstoff, der 80 bzw. 90% des Outputs eines Sektors erzeugt, wird als Baselinetechnologie /-kraftstoff bzw. –grundstoff festgelegt. Eine Technologie / ein Kraftstoff bzw. ein Grundstoff ist zusätzlich, wenn er / sie (1) weniger emissionsintenstiv ist als die Baseline oder (2) ihm Barrieren entgegen stehen oder er / sie finanziell weniger attraktiv ist als die Baseline.

Zeitgleich diskutierte das EB 'Draft Guidelines for determination of baseline and additionality thresholds for standardized baselines' (UNFCCC 2013a). Darin hatte das Klimasekretariat den sog. 'performance-penetration approach' entwickelt, um das Segment herauszufiltern, das der gängigen Praxis entspricht. Dieser Vorschlag wurde jedoch von vielen Experten kritisiert und die Verabschiedung durch das EB steht bisher aus.

Vor diesem Hintergrund stellten wir den Interviewpartnern die Frage, wie die derzeitige Balance zwischen Konservativität und Marktanreiz zu bewerten sei und ob die Interviewpartner das derzeitige Regelwerk als zu streng, zu großzügig oder als gerade richtig empfanden. Darüber hinaus fragten wir, ob die Interviewpartner den performance-penetration-Ansatz für anwendbar auf LDCs hielten und ob für diese Gruppe ggf. vereinfachte Anforderungen erlassen werden sollten.

Weitere Themen umfassten die Qualitätssicherungsrichtlinien des EB. Hierbei ging es unter anderem um Wege, um mit Datenlücken bzw. vertraulichen Daten umzugehen. Auch fragten wir nach den Kapazitäten der Gastlandbehörden, um SBs regelmäßig zu aktualisieren.

Zudem thematisierten wir die Koordinierung der Aktivitäten, die die Entwicklung von SBs unterstützen, insbesondere bei den Interviewpartnern aus den Genehmigungsbehörden. Da nach der Genehmigung einer SB diese ein Gemeingut wird und anderen helfen kann, eigene SBs zu entwickeln, fragten wir, wie die Interessen der Beteiligten, die von der Entwicklung einer SB profitieren, adäquat kanalisiert werden könnten.

Schließlich wurden die Interviewpartner zu ihren Ansichten hinsichtlich der Rolle von suppressed demand im Kontext der standardisierten Baselines sowie nach ihrer generellen Meinung zur Entwicklung der SBs gefragt.

Die Interviewpartner kamen unter anderem aus den Bereichen Gastlandbehörden und Consultants, die an der Entwicklung von SBs beteiligt waren und deshalb Einschätzungen aus erster Hand liefern konnten. Zudem interviewten wir Projektenwickler, Auditoren sowie Wissenschaftler aus dem Forschungsfeld.

Die Interviews wurden per Telefon oder Skype durchgeführt und waren als qualitative Befragung ausgelegt. Dies erlaubte einen flexiblen, offeren Ansatz verglichen mit standardisierten Fragebögen.

Bitte beachten Sie, dass die Interviews im Sommer 2013 durchgeführt wurden und deshalb auf dem Stand des SB-Regelwerks zu diesem Zeitpunkt basieren.

Empfehlungen zur Weiterentwicklung des SB-Regelwerks

Die Erfahrungen aus Arbeitspaket 1 und die Erkenntnisse aus den Interviews des Arbeitspakets 2 wurden zusammengeführt und in einem Diskussionspapier aufbereitet (Hermwille et al. 2013). Der Aufbau des Papiers folgt dem SB-Regelwerk, um es leichter nachvollziehbar zu machen.

Die wichtigsten Empfehlungen des Papiers sind:

- Es sollten Alternativen zum performance-penetration-Ansatz bei der Entwicklung der Positivliste geprüft werden. Dies könnte Konzepte umfassen, die auf Marktdurchdringung und Inputs von Beteiligten fußen.
- Inhärente Annahmen wie im Falle von *suppressed demand* sollten explizit gemacht werden, sodass Transparenz und Akzeptanz des SB-Regelwerks gestärkt werden.
- Die Qualitätssicherungs-Richtlinien sind schon für weiter entwickelte Entwicklungsländer anspruchsvoll. Das CDM EB sollte die Richtlinien präzisieren und detailliertere Vorgaben zum Umgang mit unvollständigen Daten machen.
- Disagreggierung ist entscheidend bei der Entwicklung einer standardisierten Baseline. Da ihre Ressourcen begrenzt sind, müssen DNAs die Entwicklung einer SB in einem Teil eines Sektors gegen die eines anderen Teils des gleichen Sektores abwägen. Das EB sollte Leitlinien erlassen, die diese Entscheidung der DNAs erleichtern. Die *Regional Collaboration Centres* sollten Expertise aufbauen, um die DNAs zielgerichtet zu beraten.
- Das UNFCCC-Sekretariat sollte zusammen mit anderen Organisationen wie FAO, WHO und UNDP einen Index von Forschungsarbeiten und Daten erarbeiten, auf dessen Basis ein *minimum service level* definiert werden kann. Auf dieser Basis können dann Sektoren oder Dienstleistungen aufgezeigt werden, die bisher noch nicht adressiert wurden und die Gegenstand zukünftiger Forschungsarbeiten sein sollten.

Die Erkenntnisse dieses Arbeitspakets wurde in einem DEHSt-Diskussionspapier aufbereitet (Hermwille et al. 2013), das herunter geladen werden kann unter http://www.dehst.de/SharedDocs/Downloads/EN/JI-CDM/CDM_Discussion_Paper_Standardised_Baselines.pdf;jsesionid=7890B486D248DD4C167576A73DE31C87.2_cid292?__blob=publicationFile.

Schlussfolgerungen und weiterer Forschungsbedarf

In den vergangenen zwei Jahren hat sich die Entwicklung von SBs spürbar beschleunigt. Gleichzeitig entwickelt das CDM EB das Regelwerk zu SBs kontinuierlich weiter.

So hat das EB beispielsweise auf EB 77 einen Standard „Determining coverage of data and validity of standardized baselines" (UNFCCC 2013b) verabschiedet. Dieser Standard soll zusammen mit den in 2014 überarbeiteten Qualitätssicherungs-Regeln verwendet werden (UNFCCC 2014b). Die vorangegangene Version (UNFCCC 2012a) war nicht zuletzt von unseren Interviewpartnern als äußerst anspruchsvoll bezeichnet worden.

Das Herzstück der SB-Regeln, die sog. *SB Guidelines*, sind allerdings nach wie vor *work in progress*.

Im Folgenden werden unsere wichtigsten Schlussfolgerungen und Empfehlungen zusammengefasst:

- Die Entwicklung weiterer sektorspezifischer SBs sollte weiterhin gefördert werden und ihre Anwendung durch neue Klimafinanzierungsmechanismen erprobt werden.
- Die Überarbeitung des SB-Regelwerks im November 2014 sollte die inhärenten Annahmen des performance-penetration-Ansatzes deutlich herausstellen. Sekretariat und die *Regional Collaboration Centres* sollten aktiv Alternativen zum performance-penetration-Ansatz anregen.
- Die Regional Collaboration Centres unterstützen die Entwicklung von SB in unterrepräsentierten Regionen substantiell. Es wäre allerdings wünschenswert, dass "anspruchsvollere" SBs vorangetrieben würden, die nicht den nationalen Netzemissionsfaktor standardisieren. Dies würde nicht nur die geografische Verteilung der Projekte befördern, sondern auch die Nutzbarkeit und die Flexibilität des SB-Instruments unter Beweis stellen.
- Es sollte untersucht werden, ob der performance-penetration-Ansatz den Anforderungen der suppressed demand – Guidelines widerspricht.
- Es sollte geprüft werden, ob eine Datenbank aufgebaut und gepflegt werden kann, die alle Standardfaktoren enthält, welche bei den Entwicklung von *minimum service levels* benutzt worden sind.
- DNAs und das UNFCCC-Sekretariat sollten untersuchen, ob eine Gebührenfinanzierung der Entwicklung bzw. des Udpates von SBs Sinn machen könnte.
- Die Vertragsstaatenkonferenz des Kyoto Protokolls sollte die Frage der Anwendung von SBs prüfen und erwägen, ob die Nutzung von genehmigten SBs verpflichtend gemacht werden sollte.

Summary

In 2010, at its 6th session, the Conference of the Parties serving as the Meeting of the Parties to the Kyoto Protocol introduced the concept of standardization of baselines and monitoring methodologies into the CDM. Since then, the CDM Executive Board (EB) has approved a number of Guidelines and Procedures that govern the development of Standardized Baselines (SBs) and their application in CDM projects.

First experiences with SBs are currently being gained. 20 SBs have been proposed so far, four of them were approved up to now. Still, no projects have been brought forward to date that make use of one of the approved SBs. The current crisis of international carbon markets is certainly contributing to a slow performance. However, another reason may be, that the current regulatory framework is still under development.

To support this development, the German Federal Environmental Agency commissioned the Wuppertal Institute and GFA Consulting Group in 2012 to investigate implications of SBs on least developed countries (LDCs) and their utilization in national MRV systems.

The work consisted of three major work packages (WP): A case study was conducted to make the case for the utilization of SB CDM to promote rural electrification in LDCs (WP1). As a second work package, the project team conducted a series of qualitative expert interviews. The interviews focus on the relevant EB Guidelines for the development of sector-specific Standardized Baselines, the QA/QC requirements, as well as the coordination of activities and interests with respect to the development of SBs. In a subsequent work package, the findings from the interviews and the case study on rural electrification were systematized and evaluated leading to a research report entitled 'Recommendations on the Advancement of the CDM Standardized Baselines Framework' (WP 3). Finally, the study team developed recommendations for further research.

Work package 1 concequently explores the options for the standardization of baseline emission factors putting emphasis on the inclusion of Suppressed Demand. From the wealth of approved CDM methodologies, the methodology AMS I.L 'Electrification of rural communities using renewable energy' (UNFCCC 2014a) offers already a high degree of standardization and hence was chosen by the German Environmental Agency as test case to explore the potential of Standardized Baselines. This decision was made based on a desk study using the Federal Democratic Republic of Ethiopia as reference country. The findings of that study show that the consideration of suppressed demand in the SB framework not only allows for tailoring the baseline for one specific country, it also increases the baseline emissions rendering CDM projects and/or PoAs with higher CERs volumes and increased financial attractiveness of mitigation activities.

AMS I.L offers a high degree of standardization. Moreover, the concept of Suppressed Demand is inherently integrated in the methodological approach. Assuming an electricity consumption of 500 kWh per year and household (HH), this leads to a volume of 0.878 CERs per HH per year. It is concluded that AMS I.L offers significant emission reductions compared to e.g. the average grid emission factors. Still it was found that the approach may offer further opportunities for standardization, which was achieved through the following steps:

- We put further emphasis on suppressed demand and defined a minimum service level at 1,746 lumen per HH. Using the available data on lighting technologies in Ethiopia allows for developing a standardized EF for HH lighting in the amount of 9.1 tCO2/MWh.
- Moreover, we investigated the typical load factor for off-grid diesel generators. It was concluded that the underlying assumptions by the CDM EB's Small Scale Working Group (SSC

WG) lead to design capacities (in MW) which do not allow covering peak demand appropriately. Using larger design capacities leads to lower average load factors and higher emission factors. Adopting higher values results in EFs 1.9 tCO2/MWh and 1.3 tCO2/MWh for HH electricity consumption and the electricity consumption by 'other consumers'. This approach for standardization increases the baseline emissions by 26.5% (assuming an electricity consumption of 500 kWh/yr/HH).

In conclusion, the standardization based on suppressed demand leads to an increase of the baseline emission factor of +36.1%.

The economic evaluation of carbon revenues demonstrates that a CDM program may substantially contribute to financing rural electrification activities. After subtracting CDM transaction costs and the costs of a rural electrification support program, the discounted net carbon revenues are estimated at 3.35 Mio. € (based on 6 USD/CER and annual interest rate of 14.5%). Despite low CER prices and high interest rates, this may significantly contribute to the capital costs of rural electrification activities (approx. 25%) allowing for offering e.g. reduced interest rates. Still it is important to note that the carbon market currently faces low price levels and that the future climate political framework for LDCs is not yet fully determined which involves significant uncertainties.

The above-mentioned findings were synthesised in a comprehensive report "Standardized Baselines and their Implications for a National Monitoring, Reporting and Verification System – A Case Study for Rural Electrification in Sub-Saharan Africa", which is accessible via the following link: http://www.umweltbundesamt.de/sites/default/files/medien/378/publikationen/annex_i_standardized_baselines_and_their_implications_for_a_national.pdf. Additionally, the results were taken up by a follow-up research project on behalf of DEHSt, aiming at developing a concrete standardized baseline for rural electrification in Ethiopia. This standardized baseline was developed by the project consortium and is currently being evaluated by the UNFCCC secretariat, see https://cdm.unfccc.int/methodologies/standard_base/new/sb8_index.html

The review of the current procedures for the development and approval of SBs demonstrates that various quality checks have to be accomplished prior to SB approval by the CDM EB. It is concluded that the existing provisions and procedures avoid the systematical overestimation of baseline emissions. On the other hand, these requirements may pose a substantial barrier to DNAs for the development of SBs. It seems questionable whether DNAs facing limited financial- and personnel capacities may engage in SB development without further support from Annex-I countries. This may be true for advanced Non-Annex I countries but especially for LDCs which, on the other hand, would benefit most from the consideration of Suppressed Demand under an SB.

The investigation of synergies between SB development and national MRV procedures concludes:

- SB related data may not necessarily be applicable for MRV systems, as they may involve an emission trend and/or baseline emissions based on suppressed demand.
- However, in terms of capacity requirements, significant synergies are possible. SB development may enhance local knowledge on how to aggregate Tier 2 and Tier 3 data which is also required for the compilation of national GHG emission reports.

SBs facilitate not only CDM project and Program of Activities (PoA) development. SBs support also the development of next generation carbon finance instruments such as NAMAs and Sectoral Mechanisms on the way towards year 2020. SBs are considered as national business-as-usual GHG scenar-

ios, which may serve as baselines for innovative climate financing instruments. Against this background, SBs may build a bridge between the methodological approaches and procedures developed under the CDM and Sectoral Mechanisms and NAMAs.

Expert interviews

This work package comprised interviews with 10 experts in the field of CDM and standardized baselines.

The interviews covered five topics:

1. Development of a positive list and its application in CDM projects,
2. QA/QC requirements,
3. Coordination of activities and interests with respect to the development of SBs,
4. Concept of Suppressed Demand in the SB framework,
5. Use of SBs and or key components beyond the CDM, e.g. in NAMAs, under a New Market Mechanism or as part of the operationalization of the Green Climate Fund.

The interviews explored the interviewee's perception on the appropriate balance between ensuring environmental integrity through choosing rigorous thresholds and at the same time providing sufficient incentives for investment.

The CDM EB in its 'Guideline for the Development of Sector-Specific Standardized Baselines' (UNFCCC 2011) defined a preliminary additionality/crediting threshold of 80% in priority sectors and 90% in other sectors. That means that technologies/fuels/feedstock may be ranked in descending order of their emissions intensity. The technology / fuel / feedstock that is employed to produce 80% or 90% respectively of the sector's output is selected as baseline technology/ fuel / feedstock. A technology / fuel / feedstock is additional if it is (i) less emission intensive that the baseline and (ii) faces barriers or is less commercially attractive than the baseline.

At the same time the EB discussed the 'Draft Guidelines for determination of baseline and additionality thresholds for standardized baselines' (UNFCCC 2013a). Under this, the Secretariat developed the 'performance-penetration approach' to identify the common practice segment of a sector. The proposal was, however, criticised by many stakeholders and although changes have been proposed, the adoption of the guideline was postponed.

Against this background the interviews raised the question on how to assess the current balance of conservativeness vs. market incentive and whether the interviewees perceived the proposed guidelines and procedures too stringent, too lenient or just right. Moreover, interview partners were asked whether they found the performance-penetration approach suitable for LDCs and if there should be simplified requirements for this group of countries.

Further topics comprised the quality assurance / quality control guidelines the EB developed and touched upon, inter alia, ways to deal with missing or confidential data and the capacities of host country authorities (Designated National Authorities, DNAs) to regularly update Standardized Baselines.

Moreover, the coordination of all activities supporting the development of SBs was discussed specifically with DNAs. Since once an SB has been developed the design is a common good and can help others to develop their own Standardized Baselines, the project team asked interviewees how the interest of stakeholders benefiting from the application of a SB be appropriately channelled for SB development.

Finally, the interviewees were asked about their views on the role of the concept of suppressed demand with respect to Standardized Baselines and as well as their general assessment of the development of SBs.

Interview partners the project team spoke with included DNA officials and consultants who were involved in the development of SBs and hence gathered first-hand experiences with the SB framework. Furthermore, the project team interviewed project developers, DOE experts and researchers involved in the debate around the CDM in general and SBs in particular.

The interviews were held in the form of qualitative, personal telephone or Skype interviews. This allowed for a more flexible and more open approach as compared to standardized internet-based questionnaires and enabled the team to make full use of the respondents' expertise.

Please note that the interviews took place in summer 2013 and reflect the status of the regulatory SB framework at that time.

Recommendations on advancing the SB framework

The experiences and lessons learnt from work package 1 and the results of the interviews (work package 2) were synthesized and fed into a report (Hermwille et al. 2013). It is structured in line with the regulatory documents of the SB framework to facilitate the discussion with policy makers.

The most important recommendations are:

- Alternative approaches for the elaboration of a positive list other than the performance penetration approach could be explored. This could comprise concepts based on market penetration and guided stakeholder dialogue processes.
- Inherent assumptions such as those referring to suppressed demand should be made explicit in order to enhance transparency and acceptance of the SB framework.
- The QA/QC Guidelines are demanding even for more advanced developing countries. The CDM EB should further elaborate the QA/QC Guidelines with a view to provide more guidance on how to deal with imperfect data.
- Disaggregation is a decisive factor when developing a Standardized Baseline. As resources are limited, DNAs will have to prioritize the development of an SB for one part of a certain sector over the other. The EB should provide guidance on how to choose and what to consider in this context. The Regional Collaboration Centres should develop expertise in this regard with a view to enabling them to advise DNAs and national governments accordingly.
- The UNFCCC Secretariat could team up with other UN organisations such as FAO, WHO and UNDP and other intergovernmental organisations to develop an index of research and data that can be used to define a minimum service level, in order to identify sectors or services that have not yet been targeted and to (jointly) commission further research for these sectors and services respectively.

The findings of this work package were synthesised in a discussion paper (Hermwille et al. 2013), which can be downloaded at http://www.dehst.de/SharedDocs/Downloads/EN/JI-CDM/CDM_Discussion_Paper_Standardised_Baselines.pdf;jsesionid=7890B486D248DD4C167576A73DE31C87.2_cid292?__blob=publicationFile.

Conclusions and Recommendations for Further Research

In the course of the last two years, the development of SBs has taken up considerably. At the same time, the CDM Executive Board is constantly working on the regulatory framework for SBs.

For example, the CDM EB has adopted a standard 'Determining coverage of data and validity of standardized baselines' at EB77 (UNFCCC 2013b). This standard is set to be used in combination with the QA/QC guidelines which have seen major revision in 2014 (UNFCCC 2014b). The previous version (UNFCCC 2012a) had been criticized not least by our interviewees as particularly cumbersome and demanding.

Despite this and other achievements, the core document, i.e. the SB Guidelines, is still work in progress and needs to be further improved.

The following section presents our research's key conclusions and derives related recommendations:

- It is recommended to support the uptake and further development of sector specific SBs and to explore their application under new climate financing schemes.
- The revision of the Standardized Baseline framework scheduled for November 2014 should expose inherent assumptions of the performance-penetration approach. The Secretariat and the Regional Collaboration Centres should actively encourage the development of alternatives to the performance-penetration approach.
- Regional Collaboration Centres are contributing strongly to the development of SBs in underrepresented regions. However, a stronger focus on more "sophisticated" SBs other than GEF SB's would help not only improving geographical distribution but also demonstrate the feasibility and flexibility of the instrument and increase the diversity of applicable cases.
- Explore whether the performance-penetration approach contradicts the requirements of the suppressed demand guidelines;
- Consider the establishment and maintenance of a database which allows for keeping track of all default factors which are used for the development of MSLs.
- DNAs and the Secretariat should explore options for establishing a fee structure(s) for the development and/or update of SBs.
- The CMP might want to revisit the question of application of SBs and consider making the use of SBs mandatory.

1 Background and Methodology

In 2010, at its 6th session, the Conference of the Parties serving as the Meeting of the Parties to the Kyoto Protocol introduced the concept of standardization of baselines and monitoring methodologies into the CDM. Decision 3/CMP.6 notes that standardized baselines could „reduce transaction costs, enhance transparency, objectivity and predictability, facilitate access to the clean development mechanism, particularly with regard to underrepresented project types and regions, and scale up the abatement of greenhouse gas emissions, while ensuring environmental integrity". Since then, the CDM Executive Board (EB) has approved a number of Guidelines and Procedures that govern the development of Standardized Baselines (SBs) and their application in CDM projects.

First experiences with SBs are currently being gained. 20 SBs have been proposed so far, four of them were approved up to now. Still, no projects have been brought forward to date that make use of one of the approved SBs. Although progress is being made, it is slower than many may have hoped. The current crisis of international carbon markets is certainly contributing to a slow performance. However, another reason may be, that the current regulatory framework is still under development.

To support this development, the German Federal Environmental Agency commissioned the Wuppertal Institute and GFA Consulting Group in 2012 to investigate implications of SBs on least developed countries (LDCs) and their utilization in national MRV systems.

The work consisted of major work packages: A case study was conducted to make the case for the utilization of SB CDM to promote rural electrification in LDCs. This study is based on the Approved Small Scale Methodology (AMS) I.L 'Electrification of rural communities using renewable energy' which allows for generating Certified Emission Reductions (CER) for the electrification of off-grid electricity consumers. This methodology involves a high level of standardization. Using AMS I.L as starting point, the study explores whether SBs allow for creating additional opportunities arising from SB development putting strong emphasis on the consideration of Suppressed Demand (SD). It sketched a possible standardized emission factor for a rural electrification program in Ethiopia. In a stepwise approach, national default emission data were derived for rural household lighting, other household electrical appliances and for electricity consumption by other (i.e. non-household) consumers. The study thereby investigated the application of the CDM EB's Guidelines for Suppressed Demand by defining a Minimum Service Level (MSL) for household lighting based on extensive data on available household lighting technologies and consumption patterns. This part of the work is described in chapter 2 of this report.

As a second work package, the project team conducted a series of qualitative expert interviews. The interviews were conducted in summer 2013. Interview partners included DNA officials and consultants involved in the development of SBs, as well as researchers, project developers and DOE experts. The interviews focus on the Guidelines for the development of sector-specific Standardized Baselines covering topics such as the development of a positive list and its application in CDM projects, the QA/QC requirements, as well as the coordination of activities and interests with respect to the development of SBs. The details of this work package are laid out in chapter 3.

In a subsequent work package, the findings from the interviews and the case study on rural electrification were systematized and evaluated leading to a research report entitled 'Recommendations on the Advancement of the CDM Standardized Baselines Framework'. This report starts off with a short introduction to the performance-penetration approach being the conceptual foundation of the SB guidelines. It discusses key issues raised by the interview partners with respect to the performance-penetration approach and discusses alternatives that could be worthwhile investigating. Further topics include data management and data quality requirements stipulated in the QA/QC Guidelines as

well as the Suppressed Demand Guidelines. The report concludes by summarizing the main results and deriving recommendations. These recommendations are addressed to various stakeholders. Chapter 4 of this report describes the paper and the recommendations.

The final chapter discusses the current status of Standardized Baselines and develops recommendations for further research. These can be found in chapter 5.

2 Country-specific Standardized Baseline and its Use for an MRV System

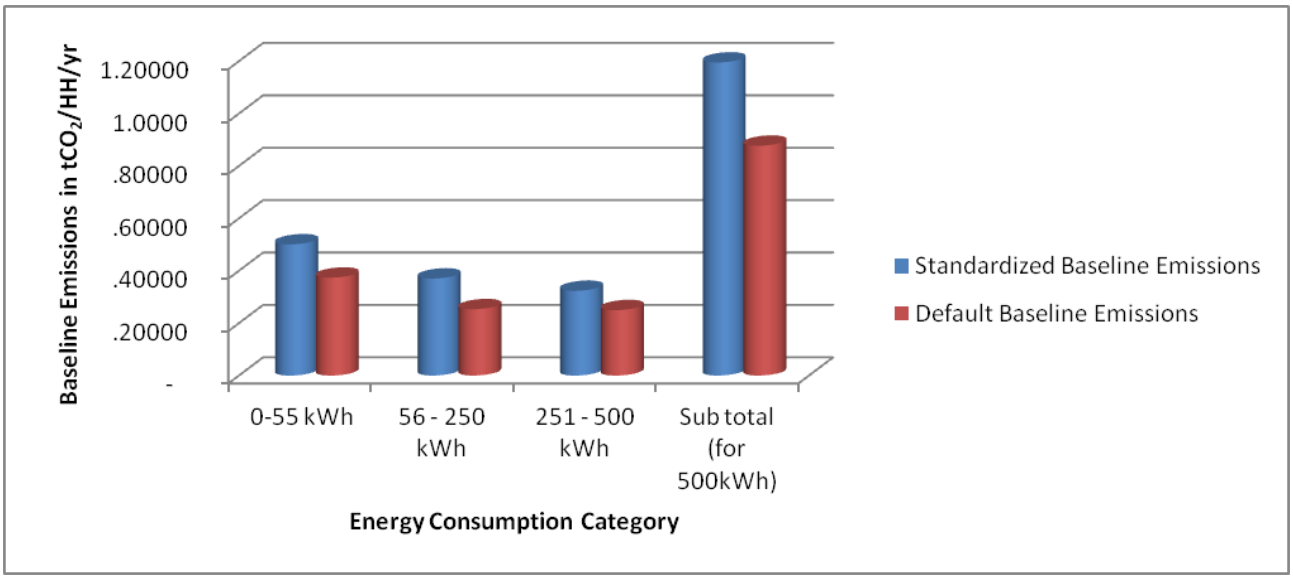
This work package explores the options for the standardization of baseline emission factors putting emphasis on the inclusion of Suppressed Demand. From the wealth of approved CDM methodologies, the methodology AMS I.L 'Electrification of rural communities using renewable energy' (UNFCCC 2014a) offers already a high degree of standardization and hence was chosen by the German Environmental Agency as test case to explore the potential of Standardized Baselines. This decision was made based on a desk study using the Federal Democratic Republic of Ethiopia as reference country. The findings of that study show that the consideration of SD in the SB framework not only allows for tailoring the baseline for one specific country, it also increases the baseline emissions rendering CDM projects and/or PoAs with higher CERs volumes and increased financial attractiveness of mitigation activities.

AMS I.L offers a high degree of standardization. Moreover, the concept of Suppressed Demand is inherently integrated in the methodological approach. Assuming an electricity consumption of 500 kWh per year and household (HH), this leads to a volume of 0.878 CERs per HH per year. It is concluded that AMS I.L offers significant emission reductions compared to e.g. the average grid emission factors. Still it was found that the approach may offer further opportunities for standardization, which was achieved through the following steps:

- We put further emphasis on suppressed demand and defined a minimum service level at 1,746 lumen per HH. Using the available data on lighting technologies in Ethiopia allows for developing a standardized EF for HH lighting in the amount of 9.1 tCO2/MWh.
- Moreover, we investigated the typical load factor for off-grid diesel generators. It was concluded that the underlying assumptions by the CDM EB's Small Scale Working Group (SSC WG) lead to design capacities (in MW) which do not allow covering peak demand appropriately. Using larger design capacities leads to lower average load factors and higher emission factors. Adopting higher values results in EFs 1.9 tCO2/MWh and 1.3 tCO2/MWh for HH electricity consumption and the electricity consumption by 'other consumers'. This approach for standardization increases the baseline emissions by 26.5% (assuming an electricity consumption of 500 kWh/yr/HH).

In conclusion, the standardization based on SD for the three different energy consumption classes leads to an increase of the baseline emission factor of +36.1%. The below figure compares the AMS I.L default EFs with the findings of the desk study.

Figure 1: Comparing Default and Standardized Baseline Emissions



Source: own calculations

The economic evaluation of carbon revenues demonstrates that a CDM program may substantially contribute to financing rural electrification activities. After subtracting CDM transaction costs and the costs of a rural electrification support program, the discounted net carbon revenues are estimated at 3.35 Mio. € (based on 6 USD/CER and annual interest rate of 14.5%). Despite low CER prices and high interest rates, this may significantly contribute to the capital costs of rural electrification activities (approx. 25%) allowing for offering e.g. reduced interest rates. Still it is important to note that the carbon market currently faces low price levels and that the future climate political framework for LDCs is not yet fully determined which involves significant uncertainties.

The above-mentioned findings were synthesised in a comprehensive report "Standardized Baselines and their Implications for a National Monitoring, Reporting and Verification System – A Case Study for Rural Electrification in Sub-Saharan Africa", which is accessible under the following link: http://www.umweltbundesamt.de/sites/default/files/medien/378/publikationen/annex_i_standardized_baselines_and_their_implications_for_a_national.pdf . Additionally, the results were taken up by a follow-up research project on behalf of DEHSt, aiming at developing a concrete standardized baseline for rural electrification in Ethiopia. This standardized baseline was developed by the project consortium and is currently being evaluated by the UNFCCC secretariat, see https://cdm.unfccc.int/methodologies/standard_base/new/sb8_index.html

The review of the current procedures for the development and approval of SBs demonstrates that various quality checks have to be accomplished prior to SB approval by the CDM EB. It is concluded that the existing provisions and procedures avoid the systematical overestimation of baseline emissions. On the other hand, these requirements may pose a substantial barrier to DNAs for the development of SBs. It seems questionable whether DNAs facing limited financial- and personnel capacities may engage in SB development without further support from Annex-I countries. This may be true for advanced Non-Annex I countries but especially for LDCs which, on the other hand, would benefit most from the consideration of Suppressed Demand under an SB.

The investigation of synergies between SB development and national MRV procedures concludes:

- SB related data may not necessarily be applicable for MRV systems, as they may involve an emission trend and/or baseline emissions based on suppressed demand.
- However, in terms of capacity requirements, significant synergies are possible. SB development may enhance local knowledge on how to aggregate Tier 2 and Tier 3 data which is also required for the compilation of national GHG emission reports.

SBs facilitate not only CDM project and Program of Activities (PoA) development. SBs support also the development of next generation carbon finance instruments such as NAMAs and Sectoral Mechanisms on the way towards year 2020. SBs are considered as national business-as-usual GHG scenarios, which may serve as baselines for innovative climate financing instruments. Against this background, SBs may build a bridge between the methodological approaches and procedures developed under the CDM and Sectoral Mechanisms and NAMAs.

3 Expert Views on the Status of the Standardized Baselines Regulatory Framework

This work package comprised interviews with 10 experts in the field of CDM and standardized baselines. This chapter describes the context and background to the different topics covered by questionnaire and the way the questionnaire was developed. A synopsis of the answers and the recommendations we derived from the interviews are depicted in the subsequent chapter.

The interviews covered five topics:

6. Development of a positive list and its application in CDM projects,
7. QA/QC requirements,
8. Coordination of activities and interests with respect to the development of SBs,
9. Concept of Suppressed Demand in the SB framework,
10. Use of SBs and or key components beyond the CDM, e.g. in NAMAs, under a New Market Mechanism or as part of the operationalization of the Green Climate Fund.

The interviews explored the interviewee's perception on the appropriate balance between ensuring environmental integrity through choosing rigorous thresholds and at the same time providing sufficient incentives for investment.

The CDM EB in its 'Guideline for the Development of Sector-Specific Standardized Baselines' (UNFCCC 2011) defined a preliminary additionality/crediting threshold of 80% in priority sectors and 90% in other sectors. That means that technologies/fuels/feedstock may be ranked in descending order of their emissions intensity. The technology / fuel / feedstock that is employed to produce 80% or 90% respectively of the sector's output is selected as baseline technology/ fuel / feedstock. A technology / fuel / feedstock is additional if it is (i) less emission intensive that the baseline and (ii) faces barriers or is less commercially attractive than the baseline.

At the same time the EB discussed the 'Draft Guidelines for determination of baseline and additionality thresholds for standardized baselines' (UNFCCC 2013a). Under this, the Secretariat developed the 'penetration-performance approach' to identify the common practice segment of a sector. The proposal was, however, criticised by many stakeholders and although changes have been proposed, the adoption of the guideline was postponed.

Against this background the interviews raised the question on how to assess the current balance of conservativeness vs. market incentive and whether the interviewees perceived the proposed guidelines and procedures too stringent, too lenient or just right. Moreover, interview partners were asked whether they found the performance-penetration approach suitable for LDCs and if there should be simplified requirements for this group of countries.

Further topics comprised the quality assurance / quality control guidelines the EB developed and touched upon, inter alia, ways to deal with missing or confidential data and the capacities of host country authorities (Designated National Authorities, DNAs) to regularly update Standardized Baselines.

Moreover, the coordination of all activities supporting the development of SBs was discussed specifically with DNAs. Since once an SB has been developed the design is a common good and can help others to develop their own Standardized Baselines, the project team asked interviewees how the interest of stakeholders benefiting from the application of a SB be appropriately channelled for SB development.

Finally, the interviewees were asked about their views on the role of the concept of suppressed demand with respect to Standardized Baselines and as well as their general assessment of the development of SBs.

Interview partners the project team spoke with included DNA officials and consultants who were involved in the development of SBs and hence gathered first-hand experiences with the SB framework. Furthermore, the project team interviewed project developers, DOE experts and researchers involved in the debate around the CDM in general and SBs in particular.

The interviews were held in the form of qualitative, personal telephone or Skype interviews. This allowed for a more flexible and more open approach as compared to standardized internet-based questionnaires and enabled the team to make full use of the respondents' expertise. The guidelines that were used to structure the interviews are attached to this report in Annex 1.

Please note that the interviews took place in summer 2013 and reflect the status of the regulatory SB framework at that time.

4 Recommendations on the Advancement of the Standardized Baselines Framework

The experiences and lessons learnt from work package 1 and the results of the interviews (work package 2) were synthesized and fed into a report (Hermwille et al. 2013). It is structured in line with the regulatory documents of the SB framework to facilitate the discussion with policy makers.

The report first focuses on the SB Guidelines. It begins with a short introduction to the performance-penetration approach that is the conceptual foundation of the SB guidelines. Most of the interview partners argued that this approach may not be universally applicable for those sectors, which do not show a correlation between a technology's / fuel's / feedstock's cost and its efficiency / emission intensity relative to competing technologies / fuels / feedstock. Instead, the interviewees proposed more process-oriented approaches or a concept focusing on market penetration only.

In addition, the question was raised whether the performance-penetration approach can actually cater for mitigation activities that comprise a multitude of technologies and measures, such as in the cement industry. Sometimes this problem could be solved by disaggregating a sector, but at a cost – the more a sector is disaggregated, the smaller the application potential of an SB.

With regard to the QA/QC system, the interview partners indicated that the relevant requirements are demanding for advanced Non-Annex I countries and that they may create a barrier for the development of SBs in LDCs. With regard to missing data or data of poor quality, the current QA/QC Guidelines at that time (UNFCCC 2012a) according to the interview partners provide little guidance on how and when it is appropriate to revert to such measures.

The concept of Suppressed Demand can be an important element of a Standardized Baseline. It allows for crediting the abatement of emissions that would occur if a certain development took place. According to the CDM EB's Suppressed Demand Guidelines (UNFCCC 2012), a MSL may be defined as a service level which meets basic human needs e.g. for lighting and electricity. This MSL is then considered as the baseline consumption level even if e.g. households do not have the financial capacities to realize the MSL in the business as usual scenario. Particularly in LDCs, SBs that incorporate suppressed demand could tap significant mitigation potential while improving the local population's livelihood. While some interviewees rejected the concept, others expressed sympathy for the underlying concept. Yet it became obvious that the MSL rationale is seen as dichotomy between hypothetical business and usual emissions versus meeting the real needs which needs to be met by a political, not a technical answer.

Last not least, the paper discusses ways how private sector engagement in the development of SBs can be promoted through coordinating measures.

Finally, the report summarizes the main results and derives recommendations. These recommendations are addressed to various stakeholders. Some are specifically aimed at the CDM Executive Board and the UNFCCC Secretariat; others are directed to DNAs. Last but not least, some of the questions will have to be discussed at a higher political level, at the CMP.

The most important recommendations are:

- Alternative approaches for the elaboration of a positive list other than the performance penetration approach could be explored. This could comprise concepts based on market penetration and guided stakeholder dialogue processes.
- Inherent assumptions such as those referring to suppressed demand should be made explicit in order to enhance transparency and acceptance of the SB framework.
- The QA/QC Guidelines are demanding even for more advanced developing countries. The CDM EB should further elaborate the QA/QC Guidelines with a view to provide more guidance on how to deal with imperfect data.
- Disaggregation is a decisive factor when developing a Standardized Baseline. As resources are limited, DNAs will have to prioritize the development of an SB for one part of a certain sector over the other. The EB should provide guidance on how to choose and what to consider in this context. The Regional Collaboration Centres should develop expertise in this regard with a view to enabling them to advise DNAs and national governments accordingly.
- The UNFCCC Secretariat could team up with other UN organisations such as FAO, WHO and UNDP and other intergovernmental organisations to develop an index of research and data that can be used to define a minimum service level, in order to identify sectors or services that have not yet been targeted and to (jointly) commission further research for these sectors and services respectively.

The findings of this work package were synthesised in a discussion paper (Hermwille et al. 2013), which can be downloaded at http://www.dehst.de/SharedDocs/Downloads/EN/JI-CDM/CDM_Discussion_Paper_Standardised_Baselines.pdf;jsesionid=7890B486D248DD4C167576A73DE31C87.2_cid292?__blob=publicationFile.

The report can also be found in Annex II of this document. The work package results were also presented at the global DNA forum on the fringe of COP 19 / CMP 9 in Warsaw, December 2013.

5 Conclusion and Recommendations for Further Research

In the course of the last two years, the development of SBs has taken up considerably. There are essentially two different types of SBs: [1] SBs developed on the basis of existing methodologies and tools and [2] SBs developed on the basis of the performance-penetration approach as specified in the SB guidelines. While both types have been taken up, a majority of the proposed SBs are in fact (national) Grid Emission Factors (GEF). The development of such national GEFs is fairly straight forward and while it certainly reduces barriers for the development of projects in the fields of renewable energy and (electric) energy efficiency, it also falls short of making full use of the potential of the SB concept. For example, it is difficult to provide a positive list for automatic additionality with these kinds of SBs.

In the view of the authors it is the second type of SBs that harbors the greater potential to develop the SB concept. And while progress is being made, e.g. through the development of SBs for rural electrification in Ethiopia, rice mills in Cambodia, and various SBs for methane destruction in landfills, there is still room for improvement.

At the same time, the CDM Executive Board is constantly working on the regulatory framework for SBs. For example, the CDM EB has adopted a standard Determining coverage of data and validity of standardized baselines at EB77 (UNFCCC 2013b). This standard is set to be used in combination with the QA/QC guidelines which have seen major revision in 2014 (UNFCCC 2014b). The previous version (UNFCCC 2012a) had been criticized not least by our interviewees as particularly cumbersome and demanding, especially for DNAs in LDCs who typically have little experience with CDM projects in general and therefore little administrative capacities. Recommendations to further elaborate the QA/QC Guidelines with a view to provide clearer guidance on how to deal with imperfections in data collection and management were taken up by the Secretariat and were approved by the Board at EB79. The revised version of the QA/QC Guidelines has seen a major shift in the character of the document. The earlier version was a strict and explicit prescription of data collection procedure and management practices. It did allow for some flexibility for cases were the prescribed approach was not feasible e.g. due to imperfect data, but provided little guidance of how to use this flexibility. In contrast to that, the latest version of the QA/QC Guidelines rather serves as a handbook for good practice including illustrative examples.

The project team considers this change a step in the right direction. The latest version is not only written in more plain language and therefore more accessible but it is also more valuable as a tool to help DNAs build adequate QA/QC systems. In a phase were Standardized Baselines are starting to develop and first experiences are being made, the more consultative character is certainly more appropriate than the prescriptive and rather strict approach of the earlier version.

Despite this and other achievements, the core document, i.e. the SB Guidelines, is still work in progress and needs to be further improved.

The following section presents our research's key conclusions and derives related recommendations:

- SBs offer a framework for the development of sector specific (i.e. covering all GHG related processes of one specific sector) emission benchmarks. As such, the framework may meet the needs of NMM and NAMAs for baseline development, as a building block for climate finance following internationally acknowledged Guidelines and Procedures. Against this background, the SB framework may build a bridge between the knowledge and achievements of the CDM and future financing mechanisms.

Recommendation 1:

It is recommended to support the uptake and further development of sector specific SBs and to explore their application under new climate financing schemes.

- The SB Guidelines were extensively discussed in course of 2013 and 2014, but no formal decision has been taken yet. The adoption of the third version of the SB Guidelines is scheduled for EB81 in November 2014. Draft revised Guidelines provide some clarification of the relationship between SBs developed on the basis of the SB Guidelines and those developed on the basis of existing methodologies or tools. Unfortunately, our core recommendations to be more explicit about the inherent assumptions of the performance penetration approach and to explore alternative approaches have not been taken up. Neither was further guidance provided on the operationalization of barrier analysis on the sectoral/ technology level.

Recommendation 2:

1. *The revision of the Standardized Baseline framework scheduled for November 2014 should expose inherent assumptions of the performance-penetration approach.*
2. *The Secretariat and the Regional Collaboration Centres should actively encourage the development of alternatives to the performance-penetration approach.*

- The Regional Collaboration Centres (RCCs) have supported the development of SBs by providing assistance to both project developers as well as DNAs through technical advice and capacity development. A core focus of the RCCs is the development of (regional) Grid Emission Factors in the form of SBs. A second focus area is the development of SBs for the waste and landfill sector.

Recommendation 3:

Regional Collaboration Centres are contributing strongly to the development of SBs in underrepresented regions. However, a stronger focus on more "sophisticated" SBs other than GEF SB's would help not only improving geographical distribution but also demonstrate the feasibility and flexibility of the instrument and increase the diversity of applicable cases.

- The research on the country specific baseline for Ethiopia showed that a combination of the Guidelines for suppressed demand with the SB framework allows tailoring the emission benchmarks and additionality to the circumstances and endowments of the host country. However, the Guidelines for suppressed demand specify that an MSL shall be established by

identification of the technology which allows realizing the MSL in the most efficient (i.e. with the lowest emission level) manner. Feedback during a stakeholder workshop in Ethiopia indicated that this requirement is perceived as being overly conservative. Moreover the underlying rationale is considered being in contradiction with the performance-penetration approach proposed by the SB Guidelines.

The establishment of MSLs requires national and/or international data on the appropriate level of energy services for a decent livelihood. In the course of the approval of AMS I.L, the SSC WG established a series of default factors (cp. UNFCCC 2012c).

The Secretariat could establish a database which maintains all default factors used for the establishment of MSLs. This could have several impacts: First it may ensure consistency between the different default factors used supporting environmental integrity. Second, such a database may facilitate the uptake of suppressed demand in the development of new methodologies and standardized baselines.

Recommendation 4:

It is recommended to:

1. *Explore whether the performance-penetration approach contradicts the requirements of the suppressed demand guidelines;*
2. *Consider the establishment and maintenance of a database which allows for keeping track of all default factors which are used for the development of MSLs.*

- The development of a SB is typically involves high costs for a consultant to support the DNA in the development of the proposed SB and may be complemented by the costs of an assessment report by a Designated Operational Entity. On the other hand, SBs are a common good - once approved, the SB may be applied by any project participant resulting in a classical free rider problem.

Against this background, the current framework provides limited incentives for private sector to develop SBs and it is estimated that a major share of SBs currently proposed (%) is driven by public support.

- A payment scheme for SB establishment, e.g. similar to the Verified Carbon Standard (VCS) fee structure[1], may provide additional incentives for the private sector to engage in the development of standardized baselines.
- A complementary fee structure may be considered for the update of SBs. This fee structure may build up financial resources to update standardized baselines after their expiry.

Both fee structures may be established either by the Secretariat and/or by the DNA.

Recommendation 5:

[1] The VCS Program Fee Schedule (VCS 2013) requires a 'methodology compensation rebate of 0.02 USD/Verified Carbon Unit which is payable to the private entity which developed the VCS methodology, upon issuance'.

DNAs and the Secretariat should explore options for establishing a fee structure(s) for the development and/or update of SBs.

- At EB 78, the EB confirmed that the application of a Standardized Baseline is at the discretion of the host country (UNFCCC 2014c). This move refers back to the CMP's decision at the Cancún climate summit that lay the foundation to the introduction of SBs. According to the EB's ruling, this means that the host country's DNA also has to decide whether or not the SB shall be mandatory or voluntary. As a consequence, if a DNA makes the application of an SBL voluntary, project developers will be able choose between a project-specific approach using an approved CDM methodology and the use of the standardized baseline. As Spalding-Fecher and Michaelowa (2013) have shown, this may lead to project developers „picking and choosing" between the approach that actually grants them the maximum output of CERs, thereby possibly posing a threat to the environmental integrity of the process. In order to account for this, the EB 78 ruling does include a provision that in case the Board feels that the approval of the standardized baseline could pose a risk to environmental integrity, it can reject that SB and engage with the respective DNA to address the issue. However, this means that the Board will have to access this risk on a case-by-case basis. One approach to minimize the risk would be very conservative SBs but this would on the other hand limit possible application of the Standardized Baseline. What is more, the EB 78 decision does not help to overcome the system of subjective additionality testing associated with CDM methodologies as project developers can always fall back on using the „conventional" methodology if the related SB is not attractive for them.
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Recommendation 6:

The CMP might want to revisit the question of application of SBs and consider making the use of SBs mandatory.

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Annex I:

Standardized Baselines and their Implications for a National Monitoring, Reporting and Verification System – A Case Study for Rural Electrification in Sub-Saharan Africa

Annex II:

Recommendations on the Advancement of the CDM Standardized Baselines Framework