



**TAKING ACTION ON SUPPRESSED
DEMAND**

TECHNICAL PAPER

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1. Introduction

1.1. The Climate Change Convention

Noting the growing evidence of changing global climate and aware of the potential impacts on social and economic development and guided by the principles and provisions of the United Nations Charter, the international community took a bold decision amidst uncertainty and adopted the United Nations Framework Convention on Climate Change (UNFCCC) on 9th May 1992 in New York, USA. The Convention was opened for signature at the Earth Summit in Rio de Janeiro in June 1992 and it entered into force on 21st March 1994. The ultimate objective of the Convention is to achieve stabilization of greenhouse gases concentrations in the atmosphere:

- at a level that would prevent dangerous anthropogenic interference with the climate system;
- within a time-frame sufficient to allow ecosystems to adapt naturally to climate change;
- within a time-frame to ensure that food production is not threatened; and
- to enable economic development to proceed in a sustainable manner.

The Climate Change Convention lays a strong basis for sustainable development, recognizing the individual level of national development and the need for economic growth to meet social and economic needs of countries, particularly developing countries. Climate change and development are closely interlinked. Development can be achieved without endangering the global climate system. The principles and provision of the Convention guide actions of Parties and indeed the decisions of the Conference of the Parties. The third Conference of the Parties (COP3) adopted the Kyoto Protocol in December 1997 in Kyoto, Japan. The objective of the Kyoto Protocol is to strengthen commitments of Parties, particularly developed country Parties. It commits developed countries to reduce their greenhouse gases (GHGs) emissions on average by 5.2% below the 1990 emission level by the year 2012.

The UNFCCC and its Kyoto Protocol are the basis for a global response to the stabilization of concentrations of GHGs and to minimize impacts of adverse effects of climate change. It therefore represents a global spirit of cooperation irrespective of the contribution of individual countries. The Kyoto Protocol also defined the Clean Development Mechanisms (CDM), Joint Implementation (JI) and Emission Trading (ET) to assist developed country Parties to comply with their Kyoto targets.

2. Carbon Market Mechanisms

Markets can play an important role in environmental protection. Hitherto the market mechanisms have not been fully utilized to promote sustainable development. The creation of the carbon commodity has stimulated and attracted interest from both private sector and Civil Society Organizations (CSOs). A key role has been played by CSOs in the development of the voluntary carbon market while the private sector has driven the development of the CDM. The experience gained from the Kyoto mechanisms particularly the CDM can be gainfully utilized in the development of future carbon market mechanisms, including the Nationally Appropriate Mitigation Actions (NAMAs) and Reducing Emissions from Deforestation and Forest Degradation (REDD). These are emerging market mechanisms. All these mechanisms require determination of reference points (baseline) and monitoring of project activities to enable computation of the emission reductions or avoided

emissions. The CDM Executive Board (EB) has developed a comprehensive and stringent regulatory framework to ensure environmental integrity of the mechanism. This level of stringency has disadvantaged small projects particularly in LDCs and African countries, which have low GHG emission levels.

3. The Clean Development Mechanism

The primary objectives of the CDM are to:-

- Assist non-Annex I parties to achieve sustainable development;
- Assist Annex I Parties to meet part of their commitments under Article 3 of the Kyoto Protocol; and
- Promote attainment of the objective of the Convention

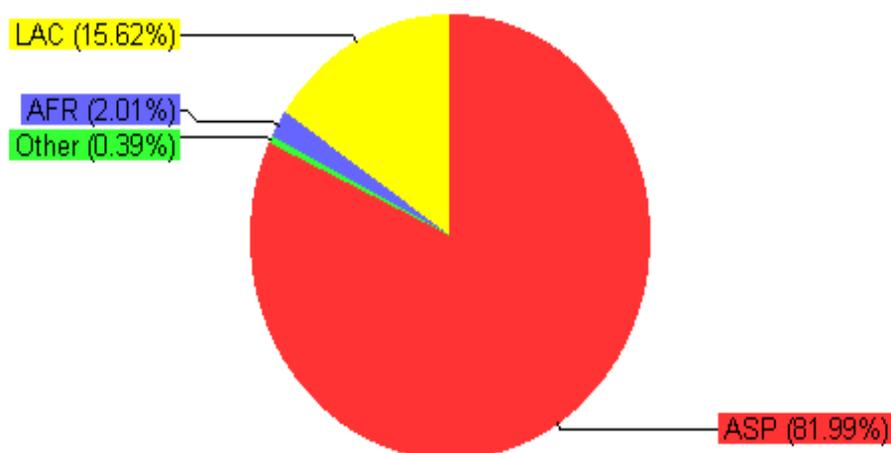
The CDM allows emission-reduction projects in developing countries to earn Certified Emission Reduction (CERs) that can be traded or used by industrialized countries to meet part of their Kyoto targets. In this regard the CDM is an offset mechanism. The Conference of the Parties serving as a meeting of Parties to the Kyoto Protocol (CMP) has instituted a regulatory framework comprising of the EB and the National Designated Authority (DNA).

The EB regulates the environmental aspects of the CDM and an elaborate support structure has been established to support its work. The CDM projects must qualify through a rigorous public and transparent registration and issuance process. The projects are also expected to contribute to sustainable development of host country Parties. The host developing country Parties wishing to participate in the CDM must designate DNA to regulate the contribution of CDM projects to sustainable development. DNAs issue letters of approval (LoA), legal instruments, which transfer ownership of the commodity (CERs) to the listed project participants

The CDM has been in operation since 2006 and the EB has registered more than 3,500 projects. These projects are expected to produce CERs amounting to more than 2.7 billion tonnes of CO₂ equivalent by the year 2012. Although the CDM is rated as a successful mechanism, the distribution of registered CDM projects is skewed to advanced developing countries with the LDCs and African countries having the least number of registered CDM projects. Fig. 1 illustrates the dominance of the Asian region in the implementation of the CDM. There are also significant differences among countries within regions with China dominating the Asian and Pacific region.

The LDCs and some African countries are characterized by high level of poverty and low level of development. The population of these countries is not able to meet the basic human needs such as access to clean and safe water, adequate energy for cooking and lighting because of a host of barriers. These barriers include low income, poor infrastructure such as electricity grid and high cost of technology e.g. more efficient appliances. It can be argued that people in low-income countries have demand for these services but this demand is not met. This situation is commonly referred to as *suppressed demand*.

Registered projects by region. Total 3586



<http://cdm.unfccc.int> (c) 18.11.2011 14:55

Key: LAC - Latin America and the Caribbean, ASP - Asia and the South Pacific,
AFR - Africa

Fig. 1: Distribution of Registered CDM Projects by Region

4. SUPPRESSED DEMAND

Suppressed demand is a desire to consume a product or service but due to barriers this desire is not met. In simple language suppressed demand is the unmet demand. These barriers include low income, poor infrastructure and low level technology. The consumption of these amenities is therefore curtailed. These barriers are discussed in subsequent paragraphs.

a) Infrastructure barrier

A consumer may have the capacity to consume a product or service but cannot consume because of poor infrastructure for example inaccessible grid or inaccessible water supply network. In such a case the demand to consume electricity or water remains suppressed until the grid or the water supply network becomes available. When the grid or water supply network becomes available then the consumer will connect and his desire to consume the electricity or water will be met.

b) Low income barrier

In low income communities resources are allocated according to the priority allotted to basic human needs. For instance basic human needs such as food and health services are given higher priority while basic human needs such as education and energy for lighting are allotted a lower priority. The demand for energy for lighting is suppressed and remains so until the household income increases. The demand for lighting energy may also be suppressed due to high initial cost of technology. A constrained income household may fix only one incandescent bulb thus limiting their energy consumption. As income increases the household may allocate more resources for electricity and will therefore increase the number of bulbs thus increasing their energy consumption. This suppressed demand is commonly referred to as the *income effect*.

c) **Technology barrier**

Technology barrier may be due to high initial cost or lack of capacity to absorb the technology. For example Compact Fluorescent Light bulb (CFLs) consume less electricity than incandescent lamps and therefore cheaper in the medium and long term. However, the initial cost of a CFL is higher than incandescent lamp and therefore the consumer may not shift to the new technology because of the initial high cost of the CFLs. The demand of the consumer for CFL is suppressed because of the initial high cost of the technology. This situation is also referred to as *low level of technology penetration*.

The energy consumption of CFLs is lower than that of incandescent lamps of the same rating and therefore CFLs reduce the cost of electricity consumption over time. However the initial high cost of the technology prevents the consumer's desire to shift to a more efficient and low cost technology thus enabling consumers to meet basic energy lighting needs. In this regard, the consumer's energy lighting needs will be suppressed. This suppressed demand could be alleviated by increasing penetration of the more efficient technology through policy measures such as tax reduction on the technology. With increase in income or policy incentives CFL price will become affordable to the consumer thus enabling the consumer to shift to a more efficient technology resulting in savings which may be used to either meet other basic human needs or increase energy consumption by buying more CFLs. In the case of using the savings to increase energy consumption, the situation is referred to as *take-back effect* or *rebound-effect*.

The above barriers (low income, infrastructure and technology) may also have a combined effect. A combination of low incomes and high unit costs of technology means the consumer cannot afford sufficient energy for basic needs. This is the *energy cost effect*. It is a combination of physical access to an energy source or technology with a high unit cost of existing energy services.

4.1 Illustrating Suppressed Demand

In low-income countries the consumption of a household may be constrained by one or more barriers and therefore their basic human needs remain unmet.

If we consider energy consumption of a hypothetical household, the curves (desired energy consumption curve) in Fig. 2 can be constructed. The intervention (project) could be an energy efficiency improvement through an application of a more efficient technology such as CFLs. While it is easy to construct the actual consumption curve it is more difficult to construct the constrained or suppressed demand curve. This may require some study to establish the suppressed demand. It can be argued that over time as the household income increases, more resources will be allocated to meet the desired energy needs. Therefore a time comes when the suppressed demand curve and the actual consumption curve will merge into one curve thus eliminating the suppressed demand.

Key

- ||| Actual Consumption (B)
- ||| Desired Consumption (A)
- ||| Suppressed Consumption (C)

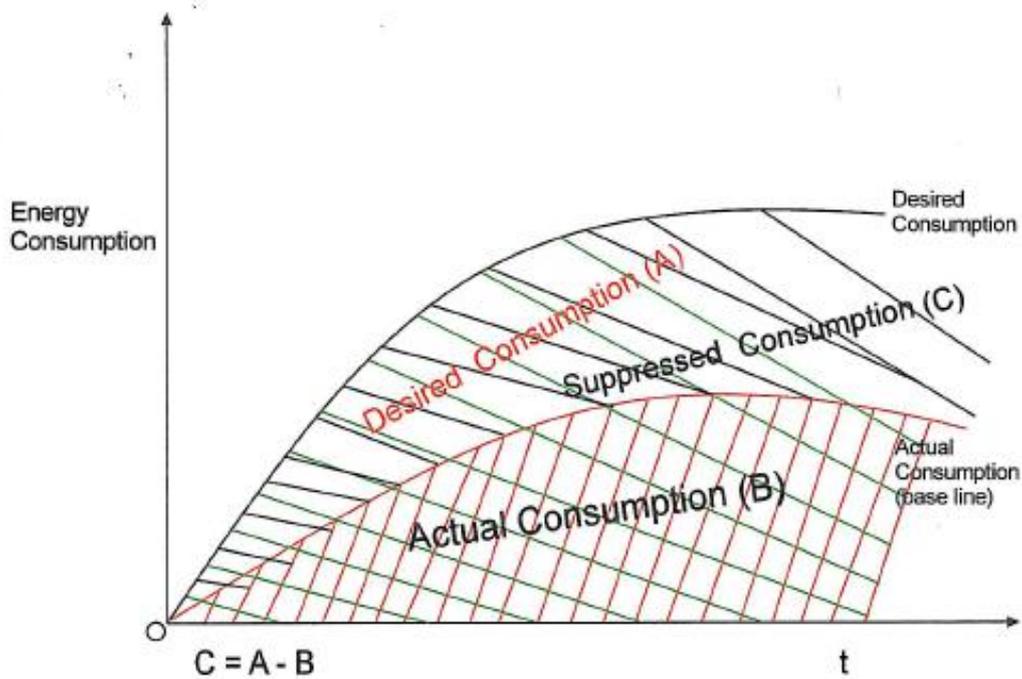


Figure 2. Illustration of suppressed demand

The question that arises is then “how can a credible suppressed demand curve be constructed? While there are methodological challenges in constructing a credible suppressed demand curve, it is quite clear at the policy level that suppressed demand must be taken into account in low-income countries if CDM projects are to contribute to sustainable development of these countries. It is important to note that implementation of the intervention with the suppressed demand complies fully with the sustainable development objective of the CDM. The policy issues are clear and therefore Parties must continue to demand methodological responses to the suppressed demand issue. However, suppressed demand is not included in CDM baseline and monitoring methodologies despite its close linkage with sustainable development objective.

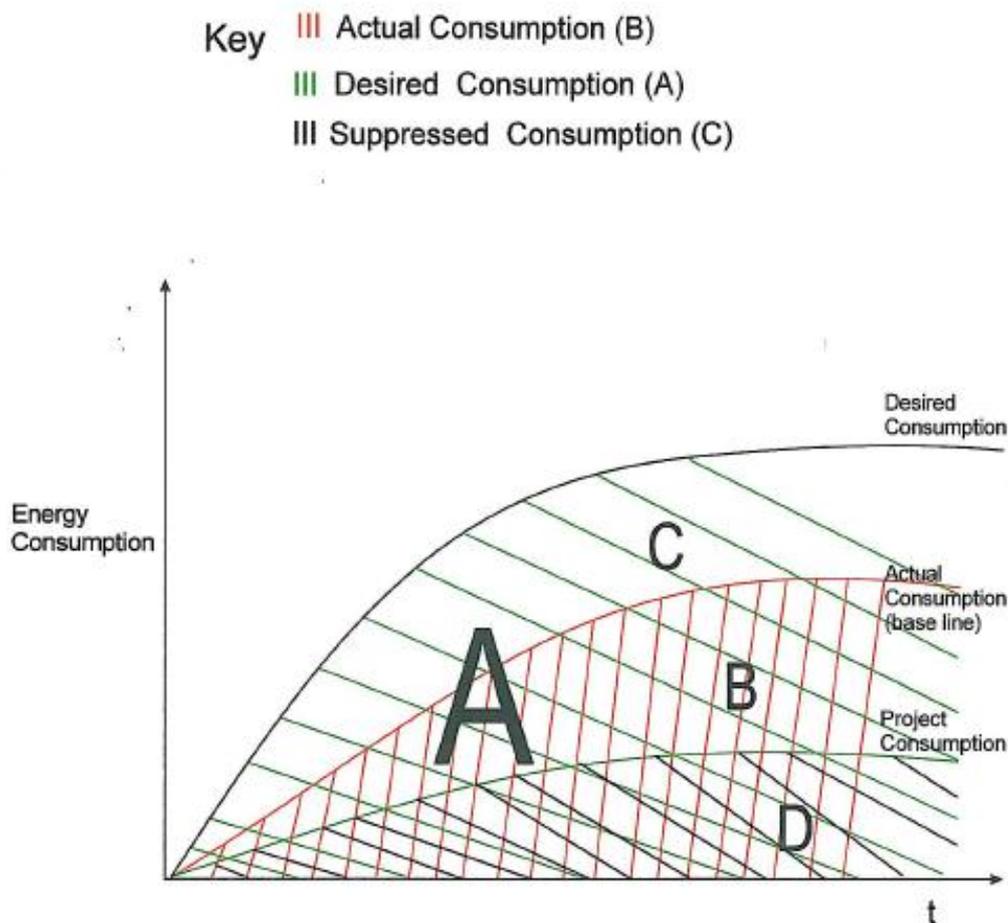


Figure 3. Illustration of impact of suppressed demand on CDM Project

4.2 Why Suppressed Demand

CERs is the difference between the baseline emissions and the project emissions. The project emissions, where applicable will include leakage emissions. The verified CERs represent the commodity which can be traded in the carbon market. Under suppressed demand situation, the baseline, which represents the current situation, does not represent the baseline without suppressed demand. LDCs and other developing countries with constrained energy consumption levels are not attractive host countries to CDM projects and therefore have been marginalized as illustrated by the statistics of registered CDM projects in fig. 1.

The modalities and procedures for the CDM do include suppressed demand as stated in the following quotation:

“The baseline may include a scenario where future anthropogenic emissions by sources are projected to rise above current levels, due to the specific circumstances of the host Party”

During the Kyoto Protocol negotiations, Brazil proposed establishment of a Clean Development Fund (CDF) to support clean development in developing countries. However, the proposal was not acceptable to developed countries. The CDM was a

compromise. The objective of the CDF is broader than those of the CDM because the CDF aimed at reducing historical and avoiding future GHG emissions. Unlike the CDF, the CDM is an off-set mechanism and largely focused on historical emissions. Although the modalities and procedures of the CDM include suppressed demand, hitherto this has not been fully operationalized. Therefore there is need to include suppressed demand in those methodologies that have comparative advantage to African countries and LDCs

Suppressed demand, prevalent in developing countries, is less understood by developed country Parties and generally there has been some reluctance to the consideration of suppressed demand in CDM methodologies. However, suppressed demand is now gaining recognition which has led to the adoption of decision 2/CMP.5.

Paragraph 35 of decision 2/CMP.5 encouraged the EB to further explore the possibility of including in baseline and monitoring methodologies a “scenario where future anthropogenic emissions (suppressed demand) by sources are projected to rise above current levels due to specific circumstances of the host Party”. The CMP also under its decision 3/CMP.6 reiterated its encouragement to the EB to further explore the possibility of including suppressed demand in baseline and monitoring methodologies, as appropriate. Inclusion of suppressed demand in baseline and monitoring methodologies will make CDM projects in poor countries more attractive hence contribution of such projects to sustainable development of low-income communities.

As a response to the request by the EB at its sixty-first meeting, the secretariat prepared and submitted for consideration draft guidelines on suppressed demand in baselines and monitoring methodologies, which was subsequently adopted. The EB responded to the CMP decision by adopting those guidelines on suppressed demand. Although the action of the EB is positive, it must be operationalized in order to realize its full potential. This positive action of the EB must be brought to fruition through accelerated skills enhancement. The LDCs and African group should continue to urge the CMP to allocate start-up funds, which can be supplemented by contribution by Parties in the position to do so, to fast track skills enhancement to include suppressed demand in baseline and monitoring of selected methodologies. Indeed such an action would complement the EB loan scheme.

The CMP should continue to recognize the work of the EB and encourage it to continue consideration of inclusion of suppressed demand in baseline and monitoring methodologies and to urge developed country Parties and multilateral organizations to support the development of such base lines. The CMP could also request the EB to review those methodologies with high potential use in Africa and LDCs to incorporate suppressed demand into their base lines and monitoring methodologies.

4.3 Suppressed Demand and CERs

The computation of certified emission reduction (CERs) requires establishment of baseline (situation before the project activities) and monitoring of project activities including related activities, which result in emissions if applicable. Activities of the project and its impacts must be monitored in a transparent way through collection and

recording of data as prescribed in the monitoring plan of the methodology to support the calculation of the project and leakage emissions. The CERs is the difference between baseline and project emissions, including leakage emissions associated with the activities of the project. This data will also be used by an independent entity (designated operational entity) to verify the claims of the project owner.

Suppressed demand has implications for the determination of baselines thus affecting the quantity of CERs. In a situation of a suppressed demand, the baseline is based on what a household can afford and therefore it is lower than in the absence of suppressed demand. Therefore in the situation of suppressed demand, the baseline is an underestimation because of the impact of suppressed demand arising from impact of any of the barriers (low income, infrastructure and technology) or a combination. Figure 3 illustrates the problem of under estimating the base line. It could also be argued that exclusion of suppressed demand undermines the sustainable development objective of the CDM. While this argument may be valid because of methodological uncertainty in estimating suppressed demand and therefore a methodological problem, the policy issues of suppressed demand are clear and should be dealt with. Increasingly suppressed demand is being recognized as a serious limiting factor to poverty eradication, particularly in LDCs and African countries where basic human needs of millions of people are not met.

Figure 3 illustrates a hypothetical energy consumption of a household. The energy consumption of a household in an LDC or African country is generally constrained as explained in the preceding paragraphs. The household energy consumption would be higher than the actual situation if the household is not constrained by low income, lack of access to more efficient technology as well as poor access to electricity grid. This situation is represented by the *suppressed demand curve (desired consumption)*. On the other hand, the actual consumption of the household is lower because of these barriers. If a project introduces more efficient technology (CFLs or appliance) the consumption of the energy will fall as a result of introducing the technology. The reduction in consumption is the area under the actual curve (baseline) less the area under the project curve. The emission reduction can be obtained by multiplying this quantity by the emission factor of the energy used by the household.

The development of the household is still constrained because it has not reached its desired consumption level i.e. the needs of the household is still suppressed. However, if the suppressed demand curve is used, the desires of the household would have been met and indeed the project would have contributed to the sustainable development of the household. A valid question that remains is how the suppressed demand curve can be constructed in a way that it is not inflated and therefore does not undermine the integrity of the mechanism? An approach which is gaining acceptance is to establish a minimum service level and use this as a baseline. For instance the minimum number of desired incandescent bulbs for a rural household could be set to 4 (sitting room, two bed rooms and compound). The lighting energy consumption of the four bulbs or paraffin lamps would be the baseline instead of one bulb or a paraffin lamp (constrained by the income of the household).

It is therefore true that the inclusion of suppressed demand in carbon market mechanisms will have considerable social and economic development benefits for developing countries. Projects, which take suppressed demand into account have

direct social benefits by generating income that allows poorer groups to purchase goods and services; increase consumption of goods and services; connect to electricity grid and transportation services. Projects such as renewable energy, low-emission waste management, efficient production process and efficient vehicles or infrastructure have social and economic benefits. Increase in CERs by inclusion of suppressed demand will encourage more private sectors with strong social responsibility policy to support implementation of such projects.

Figure 4 illustrates the take-back effect or the rebound effect which increases the project emissions and unless included in the project emissions the CERs will be overestimated. Inclusion of take-back effect will reduce CERs while inclusion of suppressed demand increases CERS.

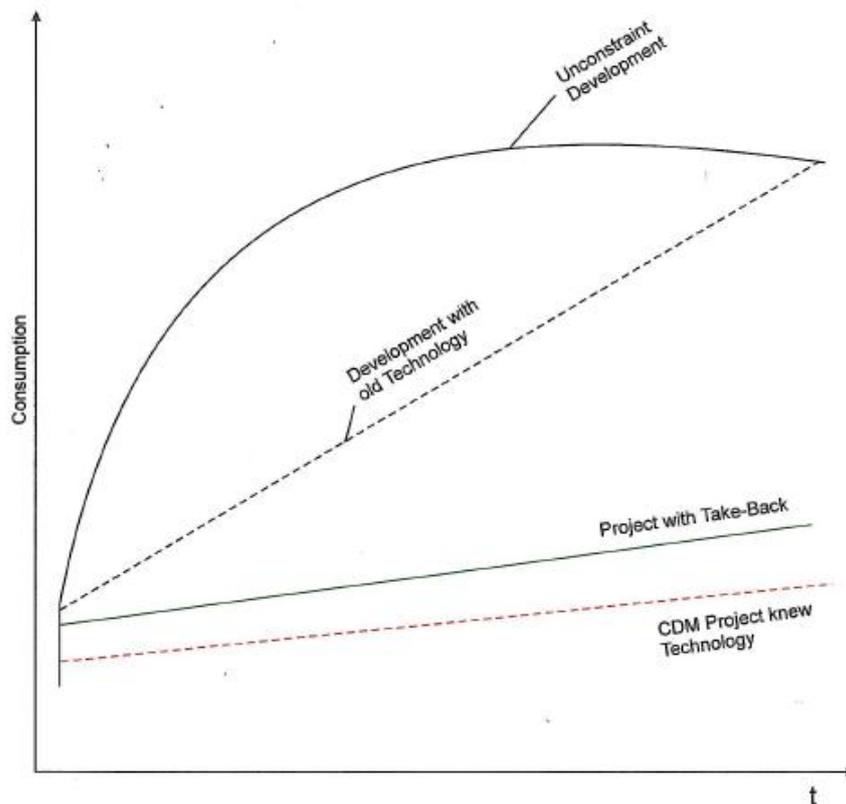


Figure 4. Illustration of suppressed demand and take-back-effect

Despite the uncertainties of the Kyoto Protocol and by implication the CDM, the European Union has taken a decision to buy CERs from LDC projects registered after 2012. LDCs should take full advantage of this opportunity by actively engaging in implementation of CDM projects. Actions to include suppressed demand in baseline and monitoring methodologies will increase the opportunity for investing in CDM project in these countries. Taking action on suppressed demand is consistent with the objective of the Climate Change Convention and the Kyoto Protocol as well as other multilaterally agreed development goals including the Millennium Development

Goals. Indeed such actions are cost-effective because they respond to several multilateral agreements.

5. The Response to Suppressed Demand

The Procedures and Modalities of the CDM contained in the Marrakech Accords do recognize suppressed demand but there has been a delay in taking action by the EB. The CMP, at its fifth session under paragraph 35 of decision 2/CMP.5, requested the EB to explore the possibility of including in baseline and monitoring methodologies a scenario where future anthropogenic emissions (suppressed demand) by sources are projected to rise above current levels due to specific circumstances of the host Party.

The Small-Scale Working Group (SSC-WG) took action and included suppressed demand in some of its methodologies. The EB considered the proposal by the SSC-WG) and approved the methodology. The EB encouraged the SSC-WG to continue addressing suppressed demand in development and revision of baseline and monitoring methodologies.

The CMP at its sixth session noted the action of the EB to address the suppressed demand issue and encouraged the EB to further explore the possibility of including in baseline and monitoring methodologies a “scenario where future anthropogenic emissions by sources are projected to rise above current levels due to specific circumstances of the host country Party” (suppressed demand).

The EB at its sixty first meeting requested the Secretariat to develop guidelines on suppressed demand to guide the revision and development of baseline and monitoring methodologies, taking suppressed demand into consideration. The Secretariat developed the guidelines on suppressed demand which has been considered and approved by the EB. This action is contained in the EB report to CMP and will be discussed at CMP7. This provides an opportunity for the LDCs and African countries to express their views, particularly on the application of the guidelines.

There are many good decisions taken by CMP and EB but because of weak institutional and technical capacity these decisions have not been implemented in these countries. Now is the time to press for enhancement of skills to enable their implementation.

The suppressed demand guidelines comprise of definitions of terminologies used, scope and applicability of the guidelines and methodological approaches (identification of the baseline technology/measure, identification of the baseline service level). While the suppressed demand guidelines appear to be relatively simple, their applications may require development of skills in developing countries, particularly in LDCs and African countries. These positive actions of the EB must be brought to fruition by fast-tracking capacity building which must include:

- Skills enhancement;
- Institutional strengthening; and
- Systems development and their application (development of procedures and modalities and their application).

The CMP will need to continue giving further guidelines to the EB and the Secretariat to implement the guidelines on suppressed demand and standardize baselines.

6. Conclusion

The CMP7 has taken a decision to explicitly recognize suppressed demand and urged the EB to accelerate the inclusion of suppressed demand in baselines and monitoring methodologies. It also urged the secretariat to accelerate the implementation of the loan scheme. Parties, Inter-governmental NGOs, CSOs and other institutions such as CDKN have an important role in the implementation of these decisions. If these decisions are fully implemented there should be a noticeable participation of LDCs and the African countries in the CDM.

In low income countries suppressed demand is closely linked with poverty levels. Recognizing suppressed demand and taking action to include it in baselines and monitoring methodologies will improve the opportunity for low-income countries to participate in the implementation of the CDM.

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