

CDM-MP77-A16

Concept note

Proposed work on market share, market saturation and penetration rate

Version 01.0



United Nations
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TABLE OF CONTENTS	Page
1. PROCEDURAL BACKGROUND.....	3
2. PURPOSE	3
3. KEY ISSUES AND PROPOSED SOLUTIONS	3
4. IMPACTS.....	7
5. SUBSEQUENT WORK AND TIMELINES.....	8
6. RECOMMENDATIONS TO THE BOARD	8

1. Procedural background

1. The Executive Board of the clean development mechanism (CDM) (hereinafter referred to as the Board), at its one-hundredth meeting, considered the request of the methodologies panel (MP) to provide a mandate to revise and expand the concept of market share to include the penetration rate as an additional element to determine whether a project could be considered additional. The Board requested the MP to explain further the scope, timelines and outputs of the proposed work in a concept note. In that context, the Board requested the MP to provide information on definitions, use of, and rationale for the critical thresholds applied in methodologies and tools, inter alia those used for additionality and common practice. In doing so, the MP may take into account the previous work undertaken in this issue.
2. This work is carried out under the project 223 (Simplification of methodologies) under objective 1(c): Develop simplified and user-friendly standards and procedures that increase efficiency and ensure environmental integrity of the CDM two-year business and management plan 2018–2019 (EB97, annex 1).

2. Purpose

3. The purpose of this document is to:
 - (a) Explain the scope, timelines and outputs of the proposed work;
 - (b) Provide information on the scope of the work which is to explore alternatives and recommend approaches to set the values used for market share /market saturation /penetration rate which could be used to demonstrate additionality, including the use in tools on first of its kind and common practice analysis;
 - (c) Provide the rationale why further work is required on defining the concepts of market share/penetration rate/ market saturation and its use/impact while assessing additionality.

3. Key issues and proposed solutions

4. The MP observed that there was a need to ensure consistency amongst the use of concepts of market share/penetration rate/ market saturation and the threshold values across tools and methodologies. Further the MP assessed that the market-share approach in CDM methodologies and tools would benefit from further elaboration.
5. The MP recommends clarifying and expanding the concept of penetration used in current methodologies and tools to differentiate between market saturation (a snapshot of the percent of a specific technology in the current stock), market share (fraction of a specific technology in new sales) and the rate of change of penetration (e.g., 1 per cent per year increase in market saturation or market share). These concepts can be used as elements to establish the additionality of an identified technology measure or product. The MP is of the view that the use of these concepts may provide opportunities to expand and simplify the assessment of additionality and common practice in many methodologies without affecting environmental integrity.

6. The following are the example methodologies (Table 1) that use market share and penetration rate for the purpose of assessing additionality. While some of the thresholds are guided by the CDM M&P paragraph 48(c)¹, others are based on literature or expert judgement.

Table 1. Example Methodologies

Methodologies	Use of market share and penetration rate
(a) ACM0005: Increasing the blend in cement production	The project activity may demonstrate additionality using First of its Kind option when it applies a technology that is different from any other technologies able to deliver the same output (blended cement), if the market share for blended cement in the host country is below 5%.
(b) ACM0012: Waste energy recovery	<p>Appendix 1: Assessment of extent of use of WECM (waste energy carrying medium) and determination of baseline practice factor for CDM project activity implemented in Greenfield facilities using a reference waste energy generating facility (or “reference facility” for the purpose of this annex) and manufacturer’s specifications</p> <p>Option 1: Assessment of other existing facilities</p> <p>The following steps shall be applied in identifying the facilities for analysis and estimating the baseline use of WECM:</p> <p>Para (f): Analyse the practice of more than 75 per cent facilities in the list. These facilities shall be randomly selected within the subset of facilities in this list. The following procedure shall be applied:</p> <p>(i) If more than 20 per cent of the analysed facilities in the list recover the waste energy fully, the methodology is not applicable;</p> <p>(ii) If more than 80 per cent of the analysed facilities in the list do not recover waste energy at all, then fpractice is 0;</p> <p>(iii) If neither (i) nor (ii) is satisfied, fpractice is the most conservative value of those who partially recover waste energy</p>

¹ CDM M & P, Para 48. In choosing a baseline methodology for a project activity, project participants shall select from among the following approaches the one deemed most appropriate for the project activity, taking into account any guidance by the executive board, and justify the appropriateness of their choice:

- (c) The average emissions of similar project activities undertaken in the previous five years, in similar social, economic, environmental and technological circumstances, and whose performance is among the top 20 per cent of their category.

Methodologies	Use of market share and penetration rate
(c) ACM0016: Mass Rapid Transit Projects	<p>Para 28: project participants shall assess whether the share of trips realized on the existing public transport system(s) in the host city, which belong to the same public transport category as the proposed CDM project activity, is less than or equal to 20 per cent of total public transport trips in the host city.</p> <p>Para 30: If the share of motorized trips realized on the existing systems which belong to the same public transport category as the proposed project activity exceeds 20 per cent of total motorized public transport trips in the host city, then the proposed CDM project activity is not additional. If the share of trips is less than or equal to 20 per cent, then project participants should proceed to Step 3.</p>

7. Furthermore, while undertaking the revision of TOOL19² and TOOL21³ and the methodologies ACM0002⁴ and AM0103⁵, the MP identified that the penetration thresholds related to renewable energy technology used in the methodologies and tools to demonstrate automatic additionality differ and, while each threshold was defined for a reason, they may merit a unified review of whether the different thresholds are based on consistent criteria. TOOL21 and other methodologies with simplified additionality criteria also apply thresholds for renewable energy and other applications. They could be subject to a unified review, as well taking a pragmatic approach that the criteria need to be consistent but not the same.
8. The MP also noted that relevant, publicly available information on market share, market penetration, saturation could be further adapted in the context of the CDM while demonstrating additionality. For example, Kartha⁶ et al (2005) explains that penetration rates measure the extent to which a given technology or practice has entered a given market and are used to gauge the effectiveness of incentive programmes such as demand-side management, market transformation, or low-income assistance. The study further defines two main measures of penetration rates that could be useful indicators of a technology's commercialization status: **market share**, the fraction of total sales in a particular market, indicating the flow of a technology into a market; and **market saturation**, is the fraction of total equipment in use and is an indicator of the stock of a technology in a market (these terms are not clearly differentiated in CDM methodologies).
9. Market share and market saturation for a technology will often differ substantially especially in the case of emerging (or declining) technologies in sectors with long equipment lifetimes, such as power plants, vehicles and some appliances. Both market share and market saturation are useful indicators of penetration. Market share is a 'real-

² TOOL19: Methodological tool: Demonstration of additionality of microscale project activities

³ TOOL21: Methodological tool: Demonstration of additionality of small-scale project activities

⁴ ACM0002: Grid-connected electricity generation from renewable sources

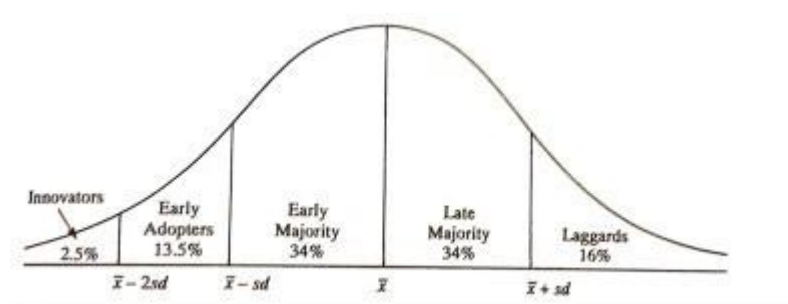
⁵ AM0103: Renewable energy power generation in isolated grids

⁶ 2005, Sivan Kartha, Michael Lazarus a & Maurice LeFranc; Market penetration metrics: tools for additionality assessment?

time' indicator of a market, whereas market saturation is a somewhat lagged indicator because of the inertia embodied in equipment stock. Market share therefore may be a better indicator of current market status, though for some sectors with fewer or larger investments (such as the electric sector) it might have volatile year-to-year variations. Market saturation is less volatile as it averages year-to-year variations.

10. Penetration, measured by either market share or market saturation, will depend on how the market is defined. The penetration of hybrid vehicles will be higher if defined with respect to the passenger car market than the entire light duty vehicle market. Penetration of fluorescent lighting will be lower in residential buildings than in all buildings. Therefore, it is essential to define the market appropriately and in the context of the CDM, this would be related to defining the project boundary/ region while establishing the "market".
11. The MP also considered the following illustration⁷ (figure 1), where the categories of adopters are innovators, early adopters, early majority, late majority, and laggards. Respectively, these categories could be interpreted as the technology in the 2.5% (innovators) range as "first of its kind"; the early adopters (next 13.5%) as those that need to demonstrate additionality, and the late majority as common practice. This is just an example, but further analysis is needed to determine the applicability of this study for different sectors and the appropriateness of existing thresholds currently used in the CDM methodologies and tools.

Figure 1. Diffusion of innovations Source: Rogers (2003)



12. The MP also considered that further in-depth analysis would be needed to ensure a consistent and robust application of the use of market share, market penetration, and market saturation concepts to demonstrate additionality,
13. Taking into account the above, and with the further guidance from the Board, the MP proposes to prepare a concept note that will include:
 - (a) Information on the previous work undertaken on this issue. This will include, inter alia, a bibliographic review incorporating definitions and proposed analogies between penetration curves and statistical distributions (e.g. normal distribution) as a means to establish such thresholds;

⁷ 2003, Everett Rogers, The diffusion of innovations.

- (b) Compilation of the existing concepts and use of market penetration rates, market shares, market saturation in methodologies/tools and the sources of such requirements;
 - (c) Propose definitions of market share, market penetration, market saturation and rate of change of market share in the context of the CDM and their applicability for various sectors/methodologies/tools, considering also the availability of data for measuring penetration in the context of CDM considering regions, sectors and project types;
 - (d) Approaches to definition of boundary, technology/product and region in the context of CDM host countries, when defining the above;
 - (e) Propose an approach and recommend values/rates for market share/ penetration rate/ market saturation linked to additionality and common practice and rationale behind such values;
 - (f) Evaluation of implications on existing requirements in the first of its kind tool, common practice analysis and methodologies/tools.
14. Outcome of the analysis in the concept note may potentially lead to a guideline, tool or framework that can be used by project proponents to ensure consistency when applying the market penetration concept, and to the update of first of its kind tool and common practice analysis.
15. With regard to the EB request (see paragraph 1 above) on the definitions, use of, and rationale for the critical thresholds used in methodologies and tools (e.g. for additionality or common practice), the secretariat has commenced the compilation of this work. Once complete, the MP will review and submit the compilation to the Board. The compilation will complement the concept note proposed in paragraph 13 above that is subject to receiving a mandate from the Board.

4. Impacts

16. Improved understanding of market penetration rate, market share, market saturation in the context of the CDM project activities/Programme of Activities and its application when demonstrating additionality and conducting common practice analysis.
17. Consistent use of the criteria and thresholds across methodologies/tools where these values will be based on relevant references/sources.
18. Consistency amongst the various methodologies and tools, when demonstrating additionality.

5. Subsequent work and timelines

19. Provided the Board gives a mandate to develop the concept note described above, it would be delivered in the second quarter of 2019.

6. Recommendations to the Board

20. The MP requests the Board to provide guidance and mandate the concept note described above.

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Document information

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