

Agenda item 4.1 (a)

Paragraph 23 of the annotated agenda

Consistent use of market penetration metrics for additionality, common practice and FOIK

CDM EB 108

Virtual meeting

1 to 3 December, 9 to 11 December and 14 December 2020



Procedural background

At EB 101, Board considered the concept note and requested MP to revise the concept note build on the experience of the CDM in this area and take into account the guidance from the Board, including:

- (a) The consistency of the approach for setting thresholds;
- (b) The criteria and rationale for setting thresholds;
- (c) Options for other approaches to setting thresholds (e.g. graded thresholds, use of more than one criterion such as market share and rate of change thereof, or use of more objective criteria for defining the market);
- (d) Road testing of the proposed approaches with practical examples.



Procedural background (cont..)

At EB 105, the Board considered the concept note and requested the MP to:

- (a) Verify whether the Rogers distribution model is an appropriate model;
- (b) Road-test the proposed approaches, building on past work (e.g. analysis of the levelized cost of electricity generation) and identify the types of cases for which the proposed new approaches may not apply;
- (c) Further clarify the rationale of any thresholds proposed
- (d) Ensure that the proposed approaches do not only address false negatives but also address false positive outcomes in the current approaches.



Purpose

To address issues raised at EB 101 and EB 105 and make a recommendation to the Board.



Key issues: current approaches

Thresholds: applied to additionality include 2%, 5%, 10% and 20%.

| Additionality | | |
|--|------------|--|
| Solar Water Heaters High efficiency biomass fired system Solar lamps Electric and hybrid vehicles E-bikes Improved efficiency of vehicle fleets | $\leq 5\%$ | TOOL19 AMS I.E AMS II.G AMS III.C AMS III.BC AMS III.BM |
| Renewable energy power generation in national grids or isolated grid | $\leq 2\%$ | TOOL32 |



Key issues: current approaches

| Additionality | | |
|--|-------|-----------------------|
| LNG buses Increasing composition of blend in cement production | ≤ 5% | AMS III.AY ACM0005 |
| Agricultural waste as feed stock for paper, cardboard and bio oil production | ≤ 10% | AM0057 |
| Electric taxiing in airports | ≤ 20% | AM0116 |
| District cooling system | ≤ 20% | AM0117 |
| Rural electrification through renewable energy source Rural electrification through grid extension Alternate waste treatment processes | ≤ 50% | TOOL32 ACM0022 |



Key issues: current approaches

Thresholds: applied for common practice 20%, 33%, 50%.

| Common Practice | | |
|---|-------|---------------------------------------|
| Energy efficiency improvements in boilers | > 33% | AM0044 |
| Commercial refrigeration Domestic refrigeration Conversion of single cycle to combined cycle power generation Utilizing waste heat to pre heat the raw materials | > 50% | AM0071 ACM0007 AM0066 AM0113 |
| Establishing high voltage direct current transmission line | >50% | AM0097 |
| High speed passenger rail system Mass rapid transit system Bus Rapid transit system | ≥20% | AM0101 ACM0016 AM0031 |



Key issues: current approaches

Technology/measure:

- sometimes a specific technology (e.g. energy efficient cookstove) is defined while in others a class of technologies (e.g. grid connected RE) are defined

Definitions of terminology:

- Terms “market penetration”, “market share”, “market saturation” and “penetration rate” are used interchangeably in the CDM tools and methodologies.
- Sometimes, technology (products/services) currently in use by consumers is used as the basis, while in others the annual sales are considered.



Key issues: current approaches

Data vintage:

- Meths/tools related to transport, cement and distributed units (such as high efficiency cookstoves) specify that the data should not be older than 3 years from the start of validation
- While others specify start date of the project if this date is earlier than start date of validation.
- In some cases, no details are specified.



Key issues: current approaches

Geographic boundary:

- Some methodologies/tools simply state boundary of analysis is the 'region'
- While others specify the entire country as the boundary allowing the project proponents to specify smaller 'regions'

Data sources: A range of sources such as:

- Official statistics;
- Peer-reviewed journals;
- Data from a sampling survey conducted as per CDM requirements;
- Data from existing registered CDM project activities or PoAs; and
- Published data from third party sources, such as international agencies (e.g. IEA) or data from industry associations.



Proposed solutions: Definitions

(a) Total market size: It is the expected total market for a technology and is equal to the total population or capacity (e.g. households, light vehicles fleet or end consumers) in the geographic region under study;

(b) Target market size: It is the potential market for a technology out of the total population or the capacity (e.g. households that can implement the technology, category of light vehicles that may be replaced or adopt the new technology, or end consumers with conditions to invest in a new product) in the geographic region under the study;

(c) Market share: It is the percentage of the market that the technology measures captures out of the total market size of all the technologies providing similar services/products in the same period;



Proposed solutions: Definitions

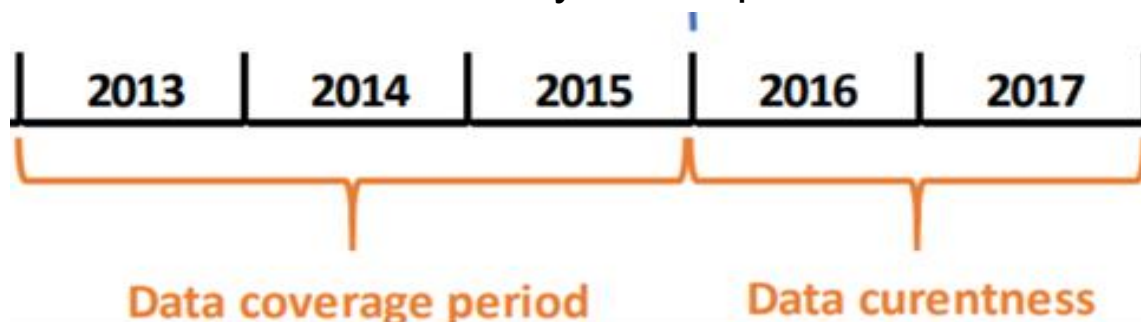
(d) Market penetration: It is the percentage of the total market value that the technology captures out of the target market size for that technology over a defined period of time. For instance, it may be the ratio, in the country or region where the project will be implemented, between (i) the sales volume of the project product/ technology over a period of time and (ii) the sales volume of all the products/technologies providing similar services in the same period;

(e) Market saturation: It is the condition where a technology has been completely diffused throughout a market (i.e. market penetration is 100%).

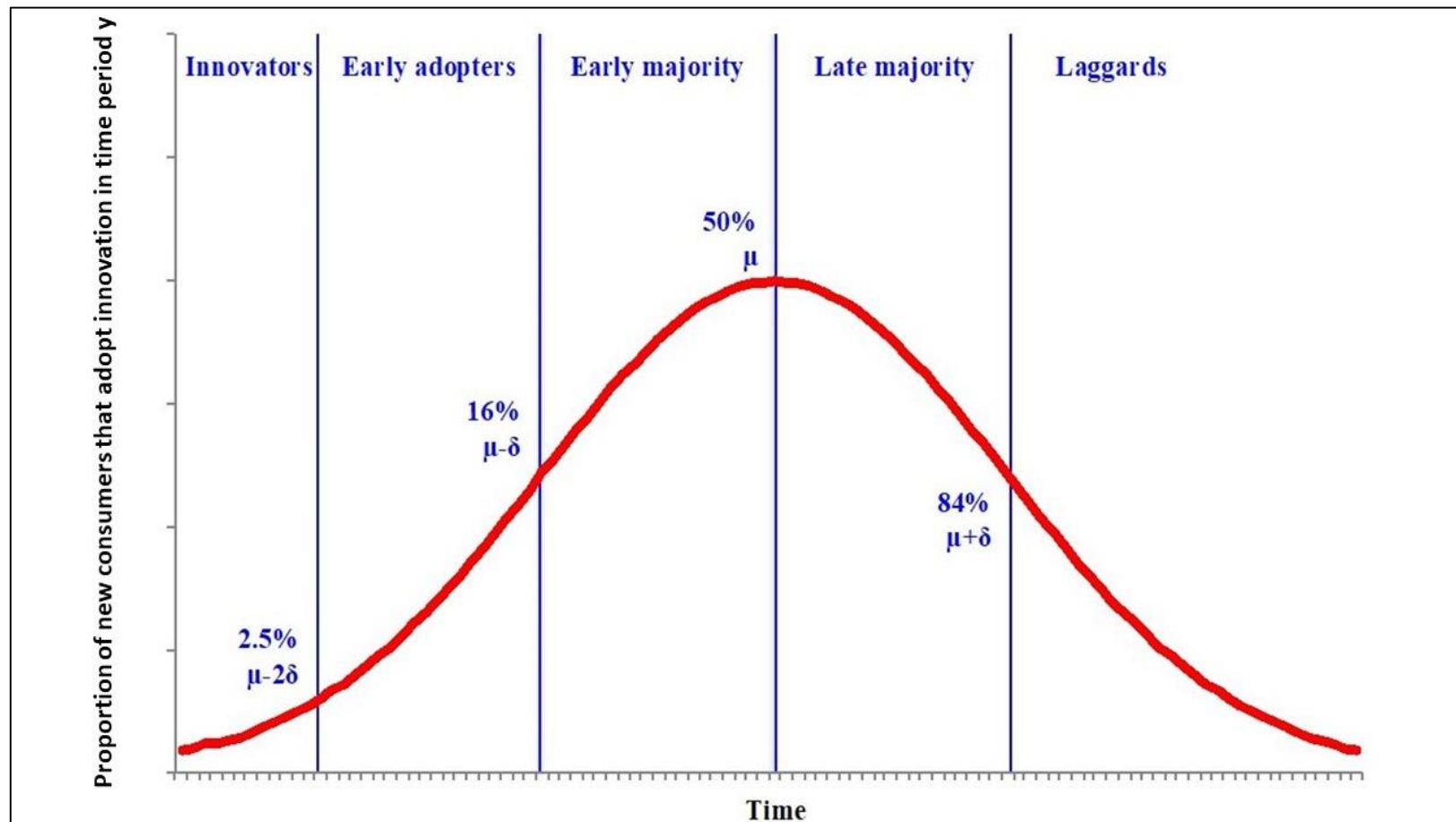


Proposed solutions: Data vintage and Data sources

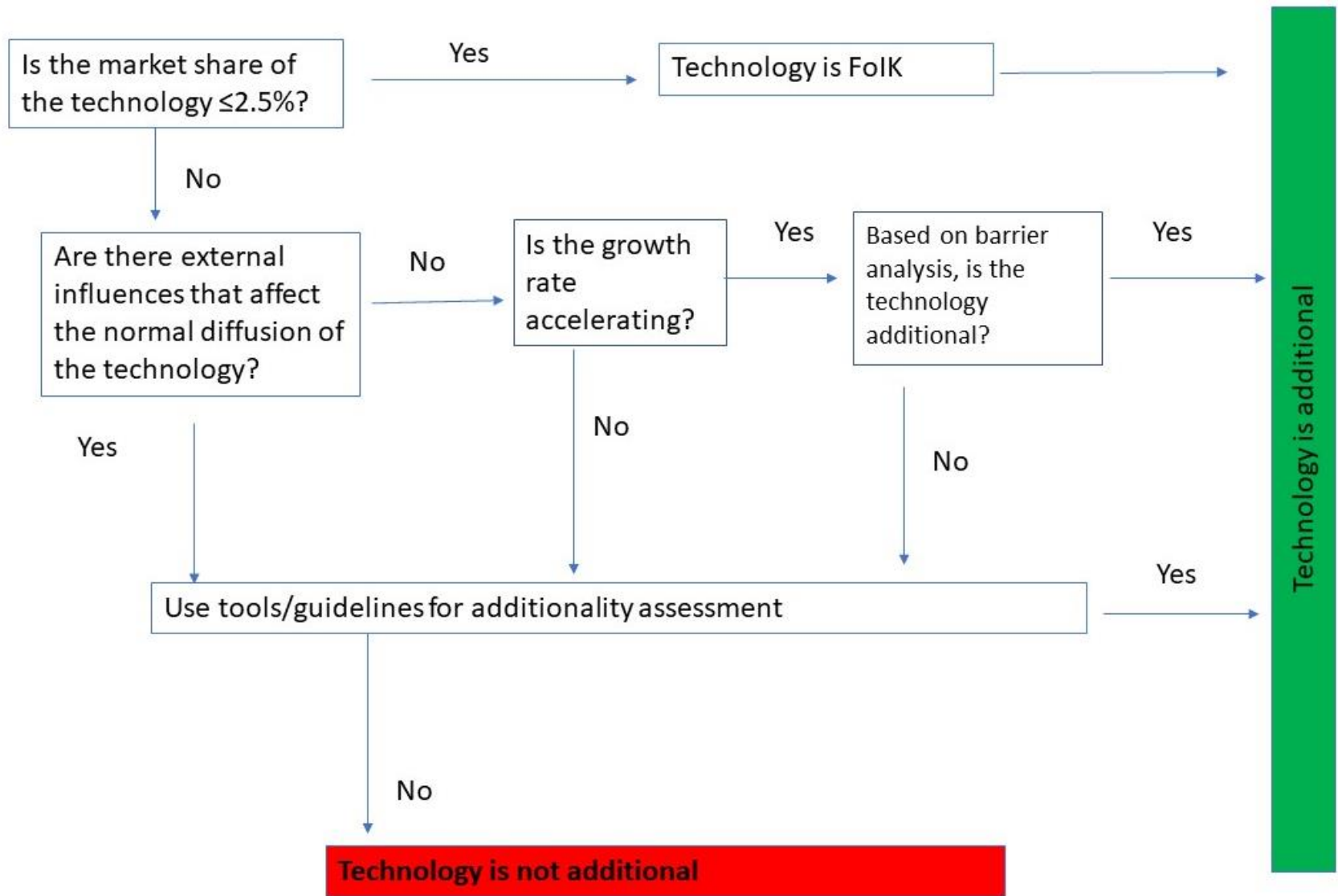
- **Requirement may be standardised, for example**
 - Data not older than 3 years from the start of validation or before the start date of the project
 - In cases of data gaps data vintage up to 5 years may be accepted.
 - Data sources such as official statistics, Peer-reviewed journals;
 - Data from a sampling survey conducted as per CDM requirements etc may be accepted.
 - CDM standard for SB “Determining coverage of data and validity of standardized baselines” may be adopted.



Roger's diffusion model based on normal distribution



Additionality assessment using accelerating growth rate with thresholds



Proposed solutions: Addressing EB105 issues

The Board requested the MP to:

a) Verify whether the Rogers distribution model assuming normal distribution and representing the diffusion of technology is an appropriate model or whether there are other models that may be more relevant for the purpose;

- Other distributions such as spiral distribution may be considered in place of normal distribution for some products for better accuracy; nevertheless, they all carry drawbacks. PPs can propose new ones
- **The Meth Panel considers that the “innovator” and “early adopter” thresholds of the Rogers theory align well with the “first of its kind” and “additional” thresholds.**



Proposed solutions: Addressing EB105 issues

b) Road-test the proposed approaches, building on past work;

- Road testing of accelerated growth rate approach was carried out for different sectors in different countries.

c) Further clarify the rationale of any thresholds proposed with regard to their ability to reliably demonstrate additionality or test common practice and implications on false positives and false negatives;

- Thresholds based on market penetration or market share are already being used in methodologies and tools.



Proposed solutions: Addressing EB105 issues

d) Ensure that the proposed approaches (i.e. first of its kind, additionality or common practice) do not only address false negatives but also address false positive outcomes in the current approaches.

- Proposed new methods only complement the existing methods in some cases.
- They do not however replace the existing methods and are not applicable in some cases.
- It is recognized that not all projects of CDM are for innovation



The proposed work will:

- Improve the understanding of market penetration rate, market share, market saturation in the context of the CDM project activities/Programme of Activities;
- Lead to consistent use of the criteria and thresholds across methodologies/tools;
- Expand the universe of projects applying to the CDM with reduced risks to environmental integrity. Statistical results, when available will strengthen the CDM process.



Recommendations

The MP further seeks guidance and mandate from the EB to:

a) **Develop a methodological tool** that:

- **Defines** the terminology and methods and
- **Includes standardised requirements** for data vintage, data sources and
- **Identify the technologies/services** whose diffusion follow a normal distribution curve and may use the accelerating growth rate approach to demonstrate additionality;

b) **Revise CDM methodologies and methodological tools** to ensure consistency among them where the definitions contained in paragraph 10 of this concept note are used.

