

Agenda item 4.1 (a)

Paragraph 21 of the annotated agenda

Consistent use of market share, market saturation, market penetration and penetration rate

CDM EB105

Madrid, Spain, 25 to 28 November 2019



- The Board, at EB 101 requested that the [concept note on market share, market penetration](#) should build on the experience of the CDM in this area and [take into account the guidance](#) from the Board at this meeting, including:
 - The consistency of the approach for setting thresholds;
 - The criteria and rationale for setting thresholds;
 - 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);
 - Road testing of the proposed approaches with practical examples.



Purpose

The purpose of this concept note (*draft*) is to update the Board on the work undertaken so far which includes:

- Assessment of existing CDM methodologies, tools and guidelines in terms of consistency of using market share and/or market penetration;
- Draft definitions of market share, market penetration, market saturation and rate of change of market share;
- Draft new approaches and values/rates for market share/penetration rate/ market saturation linked to additionality and common practice; and
- Road-testing of the proposed approaches with practical examples



Key issues - Analysis of existing situation

- CDM guidelines, tools and methodologies use **market environment and threshold levels** in assessing the **automatic additionality and/or common practice**.
 - Threshold levels for the project activity/technology are set based on the,
 - a) Equipment capacity (installed capacity (MW), power generation or energy savings (MWh) or emission reductions (tCO₂));
 - b) **Technology diffusion level (market penetration or market share or penetration rate (%))**.
 - Terms “market penetration”, “market share”, “market saturation” and “penetration rate” are **used interchangeably** in the CDM tools and methodologies.
 - Term “**market penetration**” (or simply penetration) is used **only in tool 19** – though it is referred by **several methodologies** for additionality check. **Tool 21** and all **other methodologies** use the term “**market share**” (or simply share).
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Key issues - Analysis of existing situation (Diffusion thresholds)

- The **diffusion thresholds** show **significant range** based on the type of end user rather than the technology itself. It has varied **from $\leq 2\%$ to $\leq 50\%$** based upon the technology type. In no condition, the threshold has been **more than 50%**. For example,
 - a) All technologies used by the communities or households such as SWH, ICS, etc., are given a threshold level of **$\leq 5\%$** .
 - b) Technologies implemented in supply side i.e., industrial or power sectors are provided with a threshold values ranging between **$\leq 2\%$** (renewable power in national grid) and **$< 50\%$** (production of commercial refrigeration systems).
 - c) Technologies that mostly come under scope of government or related utilities are provided with a threshold values ranging between **$\leq 20\%$** (bus rapid transit system) and **$< 50\%$** (waste treatment processes).



Diffusion threshold ranges for additionality and/or common practice

Category	Threshold value	CDM tools and methodologies	Threshold applied for
Users of the technology/measure are individuals or households or communities or Small and Medium Enterprises (SMEs)	≤ 5%	Tool 19, AMS I.E, AMS III.C, AMS III.BC, AMS III.BM	Additionality
Implementers of the technology/measure are commercial establishments and industries	-	AM0052	Common practice
	≤ 2%	ACM0002	Additionality
	≤ 2%	AM0103	Additionality
	≤ 5%	AMS III.Y, ACM0005	Additionality
	< 10%	AM0057	Additionality
	≤ 20%	AM0116	Additionality
	< 33%	AM0044	Common practice
Implementers of the technology/measure are government or related utilities	-	AM0097	Common practice
	≤ 20%	AM0101, ACM0016, AM0031	Common practice
	≤ 20%	AM0117	Additionality
	≤ 50%	Tool 21, ACM0022	Additionality

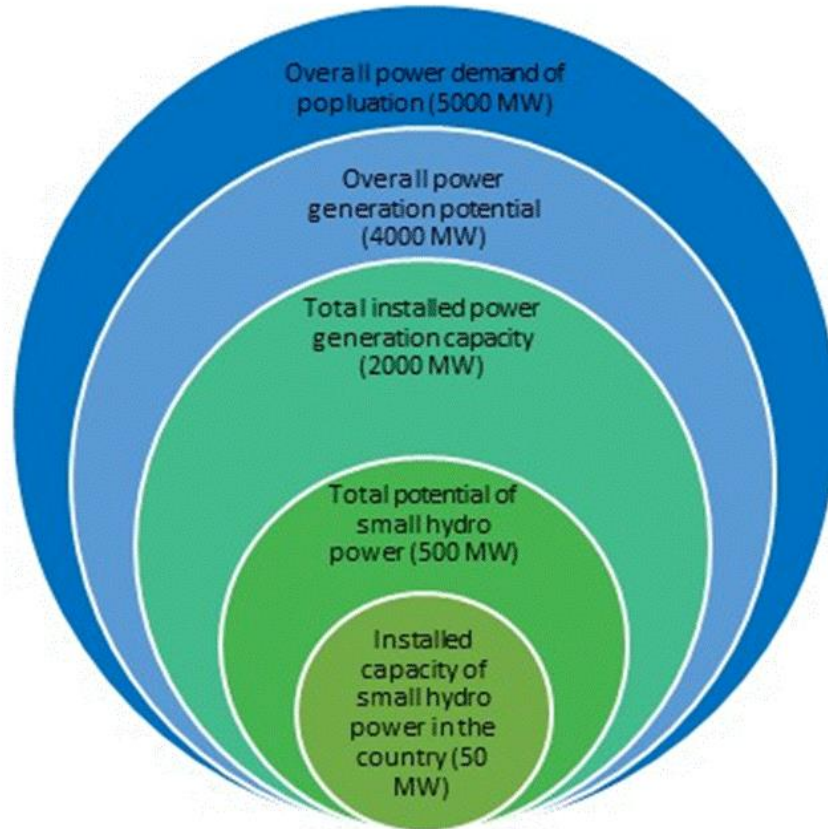


Proposed solutions : Statistical terms and definitions of key indicators

- **Total market size:** It is the **expected** total market value for a technology and is equal to the total population or households or end consumers or capacity in the geographic region under study.
- **Target market size:** It is the **potential** market value for a technology out of the total population or households or end consumers or the potential capacity in the geographic region under study. It is the conservative size estimated through the theoretical, technical, economic and the projected market basis.
- **Market share:** It is the **percentage** of total market value that the technology captures out of the total market size.
- **Market penetration:** It is the **percentage** of total market value that the technology captures out of the target market size for that technology over a defined period of time.
- **Market saturation:** It is the condition where a product has been **completely diffused throughout a market** (i.e., market penetration is 100%) and there are no further potential customers.



Calculation of Market Share, Market Penetration



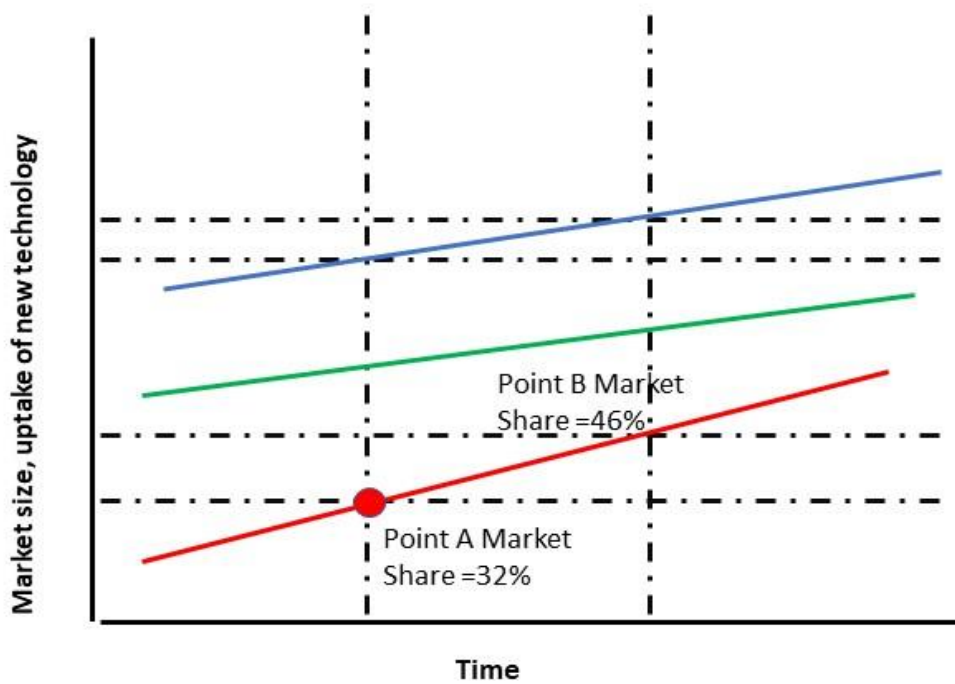
- **Market share**
 - as per the **current CDM context** = $50/2000=2.5\%$
 - **Other possible definition**= $50/5000=1\%$



Proposed solutions - market share of a technology

Market share = uptake of new technology / total market size

Target market ——— green line
New technology ——— red line
Total Market ——— blue line



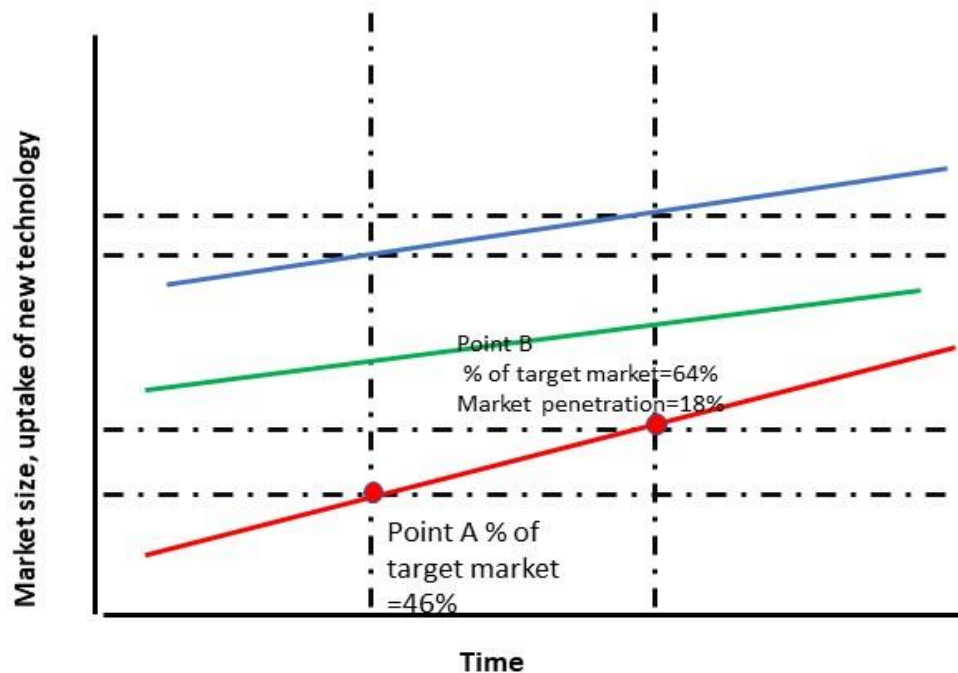
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Proposed solutions – market penetration of a technology

Market penetration= proportion of target market/
time

Target market ——— green line
New technology ——— red line
Total Market ——— blue line

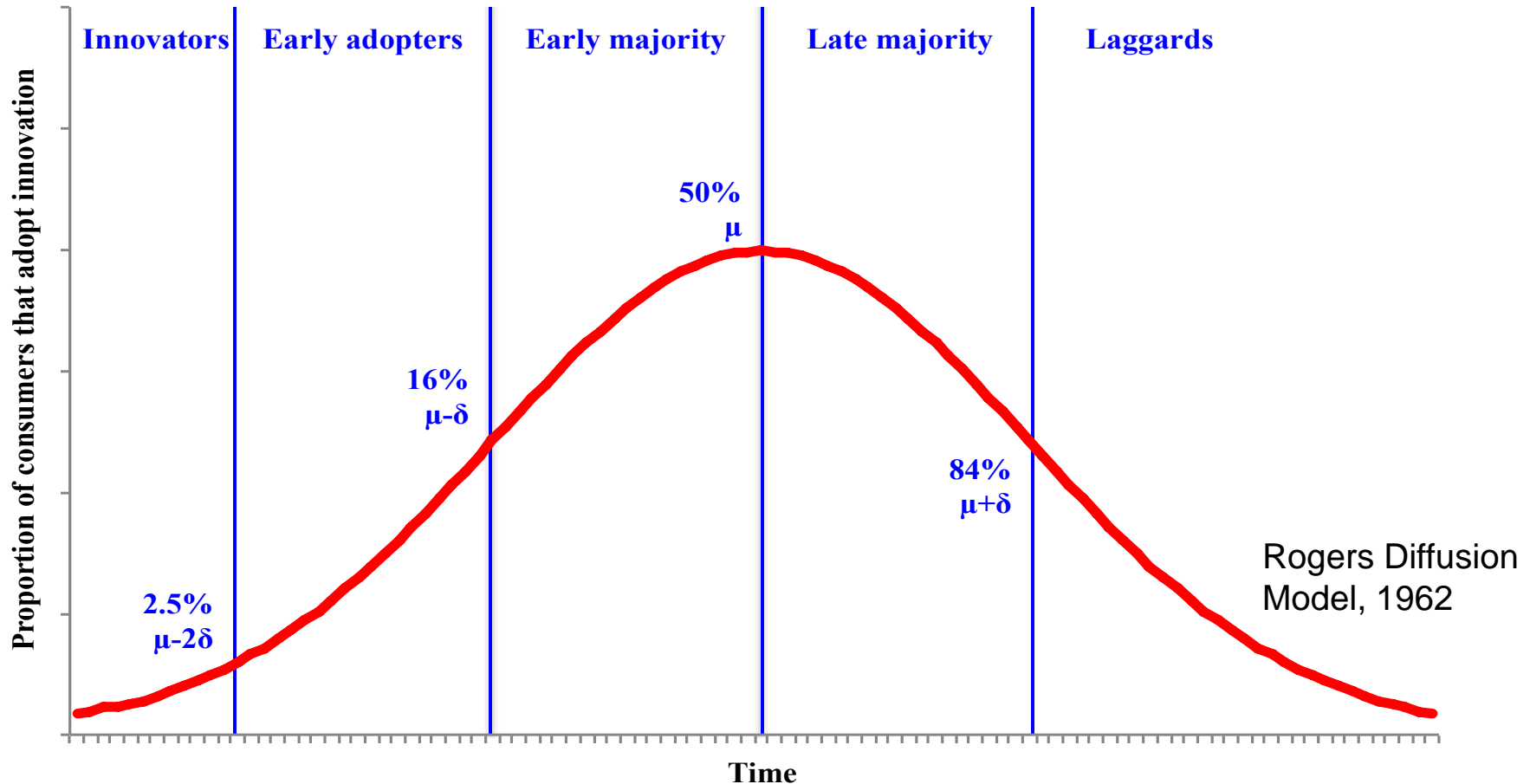


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Proposed solutions: Accelerating growth rate approach

- A technology is considered to face significant market barriers until it reaches the 16% diffusion level.

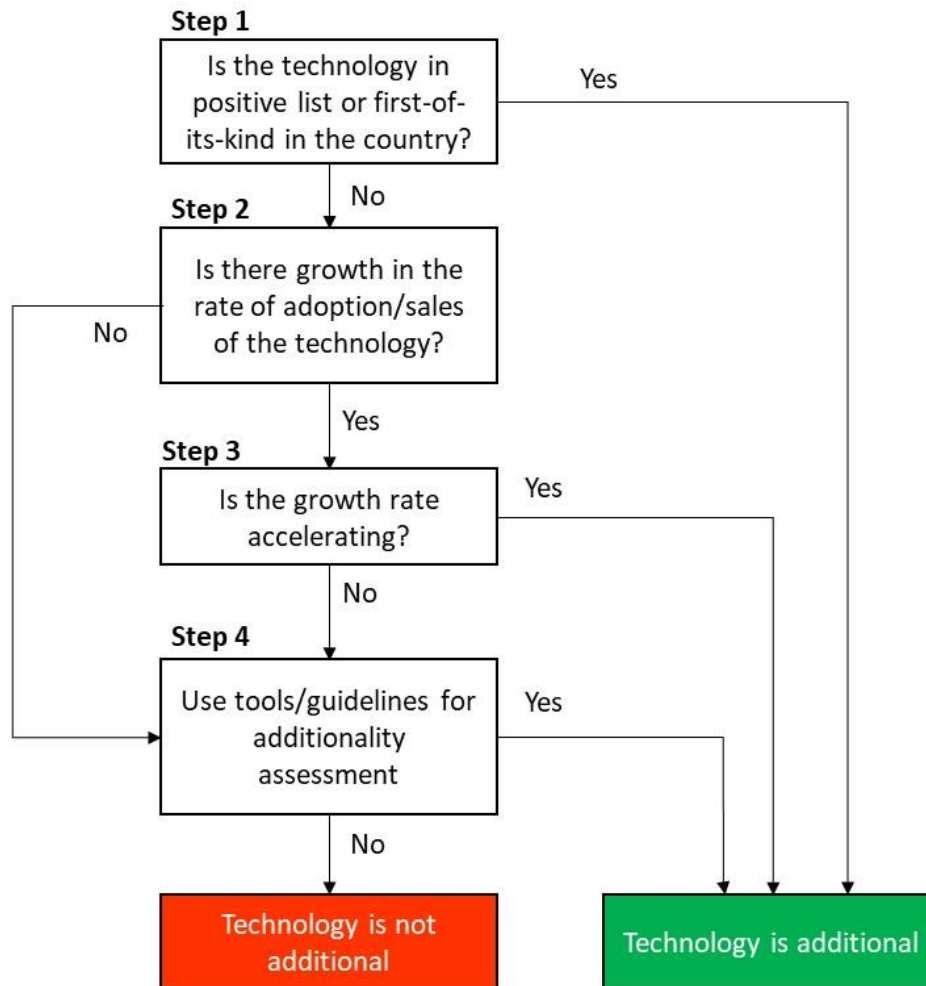


Proposed solutions: Accelerating growth rate approach

- A technology is considered to face significant market barriers until it reaches the 16% diffusion level.
- The growth rate of technology diffusion will be accelerating at this stage (Rogers theory). Once it crosses the 16% threshold, still there will be growth in the market (until reaching 50% diffusion level), but the acceleration rate will start to decrease.
- As evaluation of indicators like “market share” or “market penetration” are difficult and vary from technology to technology, it is recommended to use the accelerating growth rate of the market (i.e., year on year increase in sales or use of product or technology) as an indirect measure to demonstrate that the technology diffusion is still within 16% threshold.
- A rolling three-year time frame may be used, as this would also omit annual anomalies and may better capture the trend of technology diffusion.
- A technology will be in innovation stage until reaching 2.5% diffusion level. A technology in this stage can be considered as the “first-of-its-kind” under the CDM context.



Proposed solutions: Accelerating growth rate approach

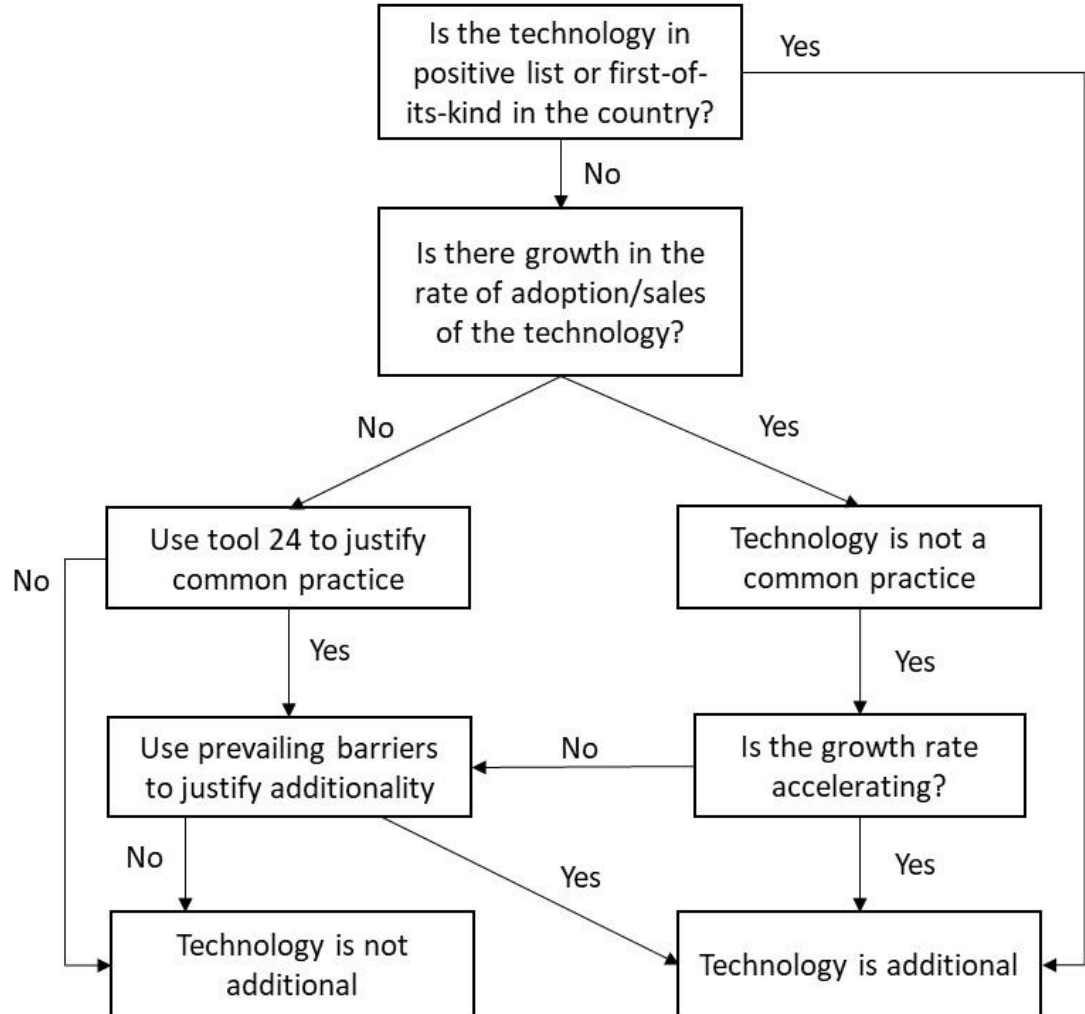


Additionality assessment using accelerating growth rate



Proposed solutions: common practice

- Although a technology is not automatically additional between 16% and 50% diffusion level, it is an indirect indicator that the technology has not reached to majority of population and thus it is not a common practice.



Schematic for assessing common practice with proposed approach



Road Testing -application of accelerating growth rate approach-

Technologies	Growth Rate	Assessment as per accelerating growth rate approach
Solar water heating (SWH) systems, India Data:2012-16	Decelerating	Non additional
Electric vehicles (EV), China Data: 2015-18	Accelerating	Additional
Solar Photo Voltaic (PV) (grid connected), India, Data: 2015-18	Decelerating	Non additional
Concentrated solar power (CSP) (grid connected), India Data: 2012-16	Decelerating	Non additional



Road testing - Key observations

- The accelerating growth rate approach **rightly captures** the market condition where a specific technology is **just emerging** with the **diffusion level of less than 16%** and faces several barriers due to baseline practices.
- The definition for the **first-of-its-kind condition** can be amended to also **include** a technology with **< 2.5% diffusion level** in a region or country.
- The accelerating growth rate approach can be **applicable** to **most of the technologies** covered in relevant tools and methodologies under the CDM that currently use the market penetration or market share conditions to **demonstrate the additionality**.
- For those technologies where the methodologies use market share or market penetration to demonstrate the **common practice**, the methodology can be **amended** to use the accelerating growth rate to **prove additionality as well**.



Initial ideas

Some initial ideas for amendments in the CDM tools and methodologies:

- **Option A:** **replace** the **market penetration** or **market share threshold checking** with the proposed **accelerating growth rate approach**.
- **Option B:** **retain** the idea of the **market share** or **market penetration** and a single threshold value of 16% diffusion level all the technologies.



Recommendations to the Board

- a) To take note of the work undertaken so far
- b) Provide guidance **on the overall direction of the work**
- c) MP will finalize the Concept Note by MP 81, 2020 taking into account guidance from the Board.

