

Figure 2.4 Candidate framework for multi-tier measurement of household cooking solutions*

Step 1: Technical performance

- Multi-tier technical measurement of the primary cooking solution in two steps:
 - Three-level measurement based on the direct observation of the cookstove and fuel.
 - Manufactured non-BLEN cookstoves (medium grade) are further categorized into four grades based on technical attributes. This grade categorization would be possible only for cookstoves that have undergone third-party testing. Non-BLEN manufactured cookstoves that have not been tested are assumed to be Grade D.

Low grade	Medium grade	High grade
Self-made ¹ cookstove	Manufactured ² non-BLEN cookstove	BLEN ³ cookstove

	Low grade	Medium grade			High grade
Attributes	Grade-E	Grade-D	Grade-C	Grade-B	Grade-A
Efficiency	Self-made cookstoves or equivalent	← Certified Non-BLEN manufactured Cookstoves →			BLEN cookstoves or equivalent
Indoor pollution		Uncertified Non-BLEN manufactured cookstoves			
Overall pollution					
Safety					

¹ A self-made cookstove refers to a three-stone fire or equivalent, typically made by an untrained person without the use of premanufactured parts.

² A manufactured cookstove refers to any cookstove available in the market (including artisans and small local producers).

³ BLEN cookstove refers to stove-independent fuels (such as biogas, LPG, electricity, natural gas). Non-BLEN cookstoves include most solid and liquid fuels for which performance is stove dependent.

Step 2: Actual use

- Measurement of additional aspects of access beyond technical performance.
- Three types of attributes, as listed below:

Conformity	<ul style="list-style-type: none"> Chimney/hood/pot skirt used (as required). Stove regularly cleaned and maintained (as required).
Convenience	<ul style="list-style-type: none"> Household spends less than 12 hrs/week on fuel collection/preparation. Household spends less than 15 min/meal for stove preparation. Ease of cooking is satisfactory.
Adequacy	<ul style="list-style-type: none"> Primary stove fulfills most cooking needs of the household, and it is not constrained by availability or affordability of fuel, cultural fit, or number of burners. If multiple cooking solutions are used (stacking), other stoves are not of a lower technical grade.

- Multi-tier measurement is based on technical performance adjusted for the above attributes.

Level-0	Level-1	Level-2	Level-3	Level-4	Level-5
				Grade-A w/o CCA w/ CCA	
			Grade-B w/o CCA w/ CCA		
		Grade-C w/o CCA w/ CCA			
	Grade-D w/o CCA w/ CCA				
Grade-E w/o CCA w/ CCA					

$$\text{Index of access to household cooking} = \sum(P_T \times T)$$

with P_T = Proportion of households at the T^{th} level.

T = Level number {0,1,2,3,4,5}

Source: World Bank /ESMAP.

Note: BLEN = biogas-LPG-electricity-natural gas; CCA = conformity, convenience, and adequacy.

* The proposed multi-tier framework (above) is complementary to the multitiered technical standards for cookstove performance proposed by the Alliance led International Workshop Agreement (IWA). The IWA multitier standards provide the basis for measurement of cookstove performance on the four technical attributes—efficiency, indoor pollution, overall pollution, and safety (annex 2.4). Laboratory measurements based on the IWA standards would be used by the multitier framework (above) to determine the overall technical performance of the primary cookstove in step-1. The objective of the multitier framework (above) is to measure the level of household access to cooking solutions. It builds upon the technical performance of each of the multiple cooking solutions being used in the household (including the use of nonsolid fuels), while also taking into account CCA attributes.