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TABLE FOR COMMENTS

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#	Para No./ Annex / Figure / Table	Line Number	Type of comment **ge** = general **te** = technical **ed** = editorial	Comment (including justification for change)	Proposed change (including proposed text)	Assessment of comment (*to be completed by UNFCCC secretariat*)
1	General	N/A	Ge	**Governance and Independence** As a matter of proper Governance, experts who are independent of the authors of the methodology should be driving the process of reviewing the model and making recommendations to UNFCCC. If the methodology and the latest version of the model are reviewed by peers or other experts, such peer reviews should be shared with all stakeholders to enable them to form independent views. Currently it appears the same experts who created the model are guiding UNFCCC which results in clear conflict of interests and is bound to raise concerns on the integrity of processes followed by UNFCCC.	1) UNFCCC should share all peer reviews transparently to all stakeholders and to the public, particularly those reviews that are not just citing the original papers but have critically reviewed the methodology and the model in entirety. 2) If the above are not available, it is suggested that a team of independent experts be appointed to conduct such a review and the results should be made public. 3) The original authors of the papers should not be part of any process that approves the methodology, or guide/educate/influence the committee members who are responsible for approving or rejecting the methodology, except to the extent they are required to clarify any technical points raised by independent experts who review the methodology and the model.	

2	**General**	**N/A**	**Te**	**A fundamental logical flaw with significant adverse consequences for climate action** The fNRB concept and application appears to have a significant fundamental error which can be illustrated with a simplified example: Let's assume a geographical area has 100tpa of biomass demand and 90tpa of new/incremental biomass supply resulting in 10tpa of unsustainable consumption. If an organization involved in climate action introduces an energy efficiency technology that reduces demand by 10tpa, the region would have achieved a sustainable equilibrium. Instead of rewarding the actor 10tpa of credits, the proposed methodology would result in only a 1tpa credit (10tpa x 10% fNRB), which makes no logical sense. The correct, and simpler, approach would be to ensure the organization gets credits for *actual emissions reduction achieved or 10tpa demand-supply gap, whichever is lower*. If the organization achieves 30tpa, their credits should be limited to 10tpa. Therefore, i) Upto 10tpa of emissions reductions in that region, total credits should be *lesser of* emissions reduction achieved or 10tpa demand-supply gap ii) Beyond 10tpa of emissions reduction, credits should be zero. Instead of the above, the proposed methodology would result in just 1tpa credit for every 10tpa of climate action. Severe dis-incentivisation of climate action is not the outcome that UNFCCC should be supporting, as they will only make it tougher to achieve the UN SDGs. To overcome this severe disincentive, in the above example, prices of certified emission reduction units using this proposed methodology would need to rise 10x from current levels to justify the project, which is both unlikely and not desirable. Also, this violates clause a iii) in Page 25 of https://cdm.unfccc.int/Reference/COPMOP/08a01.pdf#page=6 which states that Provide rigour to ensure that net reductions in anthropogenic emissions are real and measurable, and an ***accurate reflection*** of what has occurred within the project boundary; The methodology needs to ensure **accurate reflection,** and not an illogically low number. One more point to note here is that low fNRB is not 'conservative' as the model appears to assume, as it contributes fairly aggressively to increase cost of climate action and disincentivises development of new emission reduction projects, as illustrated in the example above.	Credits issued to any project should be the lesser of a) Emissions reduction achieved by the project in that period (say annual) defined in terms of tpa and b) Surplus of annual consumption of biomass in the region over available annual incremental supply of biomass defined in terms of tpa Note: 1) Methodologies should ensure that there is not more than one project in the same geographical location 2) The baseline of consumption and supply of biomass should be dynamically updated every year where feasible, or at least once every three years	

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3	**Para 12, section 1.5**	**N/A**	**Ge**	**Model has not been validated, even by the authors** As the authors acknowledge in paragraph 12, section 1.5, of the June 20, 2024 document, the model has NOT been validated even by the authors themselves. They expect to commence validation studies in the coming year and are "exploring" collaborations" to do the same. The transparency of the authors is commendable. Adopting a model that is not validated can cause irreparable damages to the credibility of UNFCCC and the entire clean cooking and safe drinking water projects industry that rely on Tool 30. The industry has already faced several challenges of perception in the recent times, and rushing to adopt a model where the authors themselves have not validated the model could lead to severe negative consequences. It is difficult to emphasize enough the significance of adopting scientific rigour in adopting these methodologies. Every project developer is expected to get every project independently verified. The standards for independent verification should be substantially higher for methodologies and tools, as they are likely to affect hundreds of projects and tens of millions of people for many years.	Postpone adoption of this methodology till • The model has been validated by the authors for all geographies and the results are available in the public domains for a reasonable period to ensure review by independent professionals and stakeholders AND • The model has been validated by independent teams of experts who are able to validate the methodology, replicate the results, thoroughly vet all the assumptions made in the model, comment on proposed implications of adopting the model globally and share such validation to general public. Every project is subject to independent validation and verification. Adoption of methodologies should, at the bare minimum, require the same level of independent verification.	
4	**General**	**N/A**	**Ge**	**Resolving conflicts with national data** Designation National Authorities of each country should have the opportunity to review the inputs and assumptions used by the model, compare them to national data available through on the ground surveys, and address any inconsistencies. UNFCCC also needs to clarify on the procedure for resolving conflicts with national level data. Project developers are likely to face intense scrutiny if they are seen as using models that contradict national data, resulting in inaccurate calculation of credits (which become even more significant as transfers and registries under Article 6.2 and 6.4 gather momentum), and are seen as adversely affecting capital flows to the poorest communities in developing countries.	UNFCCC needs to a) Ensure sufficient opportunity is provided to Designated National Authorities to review the inputs and model, propose use of their own surveys and on-the-ground data (which may contradict with a new model that uses only satellite-based images and theoretical models) b) Ensure clear guidelines, procedures and protections for project developers who start relying on this model and start contradicting sovereign sources of data and are seen as profiting or enabling 'unfair' transfer of emission reduction units/assets to international buyers in other countries.	

5	**General**	**N/A**	**Te**	**Outputs don't align with common sense** The output of the model seems to conflict with common sense. For instance, see below comparison of map derived from Mofuss with a satellite map of the same region from Google. Mofuss Map of India  Google Map of India  As per the proposed Mofuss model, the less the forest cover the lower is the fNRB value - as those areas are termed "sustainable". Desert areas in the western part of India or rain starved and financially backward central parts of India (with high fuelwood usage for cooking) have 0-10% fNRB, while the greener North-Eastern parts with highest forest cover, rainfall, and availability of biomass have the highest fNRB!! The presumed logic (not clarified by the authors of the model), is that somehow biomass demand in areas starved off biomass has fallen to such a low a level that it has achieved equilibrium in those regions. Common sense dictates that projects that support biomass preservation in areas starved off biomass are likely to be more impactful/valuable, similar to doing an SDG2 project to feed population in areas where people are starving or doing an SDG1 project in locations where poverty is high or doing and SDG6 project where there is a shortage of water. However, the results of the proposed methodology seem to suggest the exact opposite. It penalizes projects in desert/barren areas and reward projects in very fertile areas. This is equivalent of rewarding SDG2 projects in areas where people consuming over 3000 calories a day and penalising those done in areas where people consume just 600 calories a day, with the assumption that somehow people have found a "balance" between demand and supply of food. Similar logic, if applied to other UN SDGs would lead to significantly different outcomes than what the UN SDGs seek to achieve. If the results of the model don't make sense for the country with the largest population in the world, containing the largest number of people requiring interventions in terms of clean cooking and biomass protection, how can the model be trusted? How do we draw comfort that this is not a literal case of "missing the forest for the trees"? How does UNFCC propose to explain these to any concerned stakeholder, media, or public at large?	1) When complex technical models show outputs that don't align with common sense, the burden of proof on the model goes up substantially. However, as the authors acknowledge, the model is not validated even by the authors themselves. 2) Explaining why the model contradicts with common sense may be an extremely difficult exercise for the UNFCCC team and project developers. In case the UNFCCC decides to proceed with this proposed methodology which contradicts common sense, it is suggested that UNFCCC also publishes clear guidance, training, and communication materials to concerned staff members, verifiers, and project developers so that everyone can communicate the rationale effectively to the media and public. 3) Penalizing climate action in certain countries by applying a low fNRB, using a theoretical and unvalidated model that significantly undermines/contradicts substantially higher fNRB suggested by national level data, is likely to result in disputes. Therefore, it is suggested that the proposed methodology should be explicitly discussed at least with the countries most adversely affected by the methodology, and that a dispute resolution mechanism is put into place to resolve any conflicts.	

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6	**Para 24**	**1**	**Te**	**Dataset is over 10 years old** There is no justification to use old data. Clean cooking projects require baseline that is less than three years old. Same standards should be applied.	Use datasets that are less than 3 years old.	
7	**Table 5**	**N/A**	**Te**	**Standard deviations are way too high** In financial markets, “information ratios” are used to assess the skills of an investment manager. Signal to noise ratio is a more widely understood concept to evaluate the utility of signals coming out of a model. The levels of standard deviation relative to mean for fNRB values in Table 5 are exceptionally large. Smaller the standard deviations are relative to size of the mean, higher is the perceived credibility of the model. In large countries like China and India, the ratio of Standard Deviation/ Mean fNRB is as high as 3.5x to 4x, while in countries like Indonesia it is over 20x. Even in smaller countries like Colombia and Guyana, the ratios end up being too high to even mention as the base is zero or very low. It is very difficult to build credibility for a model that has such massive levels of standard deviation.	Difficult to suggest a solution. Reinforces the need for thorough independent investigation of the model, inputs, assumptions, and outputs through teams of independent experts.	

8	**General**	**N/A**	**Te**	**Several brave assumptions and omissions** The model makes two key estimates for making its forecasts i.e. growth of biomass (supply) and consumption of fuelwood (demand). The forecasts are made all the way to year 2050. In order to arrive at these forecasts, the model has to get numerous extremely difficult/impossible-to-forecast assumptions correctly. The probability that any set of humans, or computer models, can get all of these and their inter-play right at a pixel level for next thirty years is likely close to zero. Nevertheless, that's what the model bravely attempts to do. To highlight some of the important ones (not meant to be an exhaustive list to avoid getting too lengthy): 1) **Impact of climate change:** Many the projects that rely on the proposed methodology are likely to be implemented in areas which are vulnerable to vagaries of climate change (rainfall quantity, variability of monsoons, disasters like floods/droughts, warming in that area, atmospheric moisture content, drying up of soil, reduction in ground water etc) and farmers' responses to those. These are extremely difficult assumptions to forecast, that too at a pixel level. The model appears to ignore them in assuming a normalized biomass growth function till 2050, which has been derived from data before the impact of ongoing global warming. 2) **Impact of Government policies:** Many Governments have introduced policies to influence biomass demand and supply. One example among many, is the push towards biofuels. The impact of ethanol policy on corn cultivation and impact on other agricultural/forestry systems in the USA is well known. We can already see the impact of these new policies on the ground, in terms of rising demand for biomass in some regions which are classified as "sustainable" with 0-10% fNRB, and the trend is only likely to accelerate. Not only does the model ignore current policies, but also ignores all potential changes to policies till 2050. Arguably, even the Governments in those countries can't forecast policy changes. Nevertheless, they are likely to have a substantial impact on biomass demand and supply. 3) **Carbon taxes and price on carbon**: Putting a price or tax on carbon is likely to push demand away from LPG/fossil fuel towards renewable fuels, including biomass. Therefore, availability biomass is likely to come under pressure as demand rises due to increasing costs of fossil fuel. The model completely ignores this development, which are at the core of climate action. 4) **Import restrictions/constraints**: Many countries import LPG, a key substitute for fuel wood. For e.g. the recent currency movements and balance of payments crisis in Sri Lanka has likely driven up demand for fuel wood. Again, these factors are ignored by the model. 5) **Circularity:** The global movement towards circularity has driven many industries to look at biological material to	1. Strongly suggest that UNFCCC avoids any model that relies on forward-looking assumptions. Many of these, and their interplay, are impossible for any model to predict even for a few months/quarters. Using that as tool for all projects in future is going to be extremely difficult to justify or defend. 2. See suggestion no. 2 in this document that recommends a dynamic baseline based on historical data. Avoids the need for forecasts. 3. A simpler approach based on historical data should be preferred over a complex, theoretical and unvalidated model that that relies on numerous heroic forward-looking assumptions or simply ignores key market/policy/climate developments.	

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				substitute inert materials (For e.g. textiles switching to bamboo, steel/construction being substituted by bamboo/timber, switching from plastic to biodegradable substitutes in numerous industries). All these are likely to increase demand for biomass. Again, completely ignored by the model. 6) **Financial flows** are moving away from fossil fuel like LPG as many financial institutions are shying away from supporting those industries. Several companies are switching to "renewable" biomass fuel even for industrial applications. This will likely drive-up the demand for biomass and reduce the supply currently available for the rural poor to "collect". Financial flows and net zero commitments of financial institutions are ignored by the model. On the demand side, the model makes a brave assumption that demand for biomass will go to zero by 2050. There is just one simple problem in the assumption. Biomass is often a "free" fuel for the rural poor, while they have to pay for an LPG cylinder or electricity. It would be challenging to find an economist who can back a model that assumes a free fuel's demand will collapse to zero, when carbon taxes and cutting off financial flows to fossil fuel industries are driving up the cost of alternatives.		

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9	**General**	**N/A**	**Ge**	**Alignment with forest cover targets** Several countries have announced targets to increase the area under green cover. The proposed model appears to ignore this factor and aims to preserve current cover at best. In countries where there are official targets to increase this cover, the NRB calculation needs to take this factor into account. For instance, if the current forest cover is 25% and that is targeted to be increased to 30%, there would be an additional implied demand of a 5% cover of biomass. It is suggested that this be factored into the model, to ensure that projects are aligned with national targets for forestry cover. Since forest cover targets are not mentioned at pixel levels, the model may need to use a standardized adjustment factor for each country based on available data on forest cover in the country and the targeted percentage forest cover in the country. For instance, if the forest cover in a country is 23% in 2023, and the country targets to increase forest cover to 30% by 2030, every year's additional biomass supply should be adjusted to reflect that target so that projects are aligned with such targets.	Credits issued to any project should be the <u>lesser of</u> 1. Emissions reduction achieved by the project in that period (say annual) defined in terms of tpa and 2. (Surplus of annual consumption of biomass in the region over available annual incremental supply of biomass defined in terms of tpa) PLUS (additional tpa of biomass to achieve targeted forest cover in the region in that year) Notes: a) Methodologies should ensure that there is not more than one project in the same geographical location b) The baseline of consumption and supply of biomass should be dynamically updated every year where feasible, or at least once every three years	