

Clean Technology Fund (CTF)
India Grid-Connected Rooftop Solar Program (P155007)
Responses to Comments from the United Kingdom received on December 14th, 2015

Comment	Team Response
<p>Given the potential of this type of programme being replicated elsewhere, what steps will be taken to capture lessons learned as the programme is implemented?</p>	<p>The Program for Results instrument used for this operation has strong focus on Monitoring and Evaluation. The implementing agency SBI has committed to regularly monitoring the program results framework, including the disbursement linked indicators. SBI will submit unaudited reports on program expenses and results on a semi-annual basis and an audited report for the same variables on an annual basis. Building on this robust M&E framework, the following specific steps are proposed for capturing lessons from implementation:</p> <ol style="list-style-type: none"> 1) Regular updating of the program operations manual by SBI as needed, to reflect lessons learned during implementation 2) Support to MNRE for undertaking consolidation of lessons from this solar rooftop program as well as those under parallel programs funded by ADB and KfW by MNRE, and systematic sharing of experience amongst all three programs through semi-annual workshops 3) Identification of lessons as part of reporting at the conclusion of implementation support missions of the World Bank 4) Internalization of the lessons of this operation when SBI launches the second phase of the program with its own funds.
<p>As the proposal makes clear that there are significant opportunities for employment creation. Is there any reason why employment created should not be included in the Results Framework?</p>	<p>Good practice requires that any estimation employment benefits from deployment of rooftop PV must also take into account job losses that may occur in other sector such as thermal generation or coal mining. Such assessments of secondary impacts requires sophisticated economic modelling that is best undertaken at the economy-wide level rather than just the program level. It may hence be extremely difficult to track employment generation as part of the results framework. However, the Bank team will review options for estimating employment benefits of rooftop solar PV at the national level during implementation.</p>

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<p>Is implementation of rooftop PV at scale desirable in the long run? Table 6 on page 51 shows how tariffs for other customers increase as levels of penetrations of rooftop PV increase, “if no action is taken”. What kind of action would need to be taken?</p>	<p>Implementation of rooftop solar PV on scale will enable India to meet its growing electricity demand while reducing air pollutants and carbon emissions. Since the economics of rooftop PV is improving rapidly, this will be possible at little or no incremental cost. Rooftop solar PV can hence be expected to deliver significant environmental and economic benefits. However, as noted in the program appraisal document, it will be important to prepare discoms for an electricity sector with much higher levels of penetration of GRPV through Technical Assistance and capacity building programs. Such a support should include transition to new business models that will help discoms ensure financial sustainability. Depending on the business models used by different discoms, there need not be an immediate and drastic increase in tariffs for other customers as levels of penetration of rooftop PV increase. Thank you for pointing this out—we will modify the text slightly in the next version of the PAD which will be presented to our Board.</p>
<p>On page 42 there is a summary of the advantages and disadvantages of rooftop solar in India. The disadvantages include that rooftop solar is an intermittent energy source, not a substitute for peak demand. Are you able to provide more detail on the risks around intermittency, the impacts of this and how it will be managed?</p>	<p>The costs associated with intermittency are well known. These include (i) additional operation and maintenance costs of thermal plants if they have to operate at lower load factors that would otherwise be the case; (ii) the need for standby generation or battery storage to provide power when there is no sunshine; (iii) grid augmentation and modernization costs e.g. introduction of smart meters. The Government of India is well aware of these potential incremental costs and risks and is working proactively to improve the flexibility and resilience of the grid. Grid integration issues are being addressed by the India Smart Grid Task Force (ISGTF), an inter-ministerial task force and the India Smart Grid Forum (ISGF), a public-private partnership initiative. The national transmission utility, Power Grid Corporation India Limited (POWERGRID) is taking the lead in implementing the Green Energy Corridor Project to facilitate evacuation of renewable energy across the country. A multi-year grid integration study led by NREL and funded by USAID and World Bank is also underway to better understand the costs of intermittency.</p>