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January 2017 | New Delhi, India

CEEW Policy Brief

GST: A Good Solar Tax?

Impact of the Proposed GST on India's Solar Ambitions

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ANJALI VISWAMOHANAN



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A policy brief on “GST: A Good Solar Tax? Impact of the Proposed GST on India’s Solar Ambitions”.

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CEEW's major projects on energy policy include India's largest energy access survey (ACCESS); the first independent assessment of India's solar mission; the Clean Energy Access Network (CLEAN) of hundreds of decentralised clean energy firms; India's green industrial policy; the \$125 million India-U.S.

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1. Introduction

The Government of India is gearing up to implement the Goods and Services Tax (GST) in the next financial year. Given growing concerns within the solar industry regarding the impact of GST, this policy brief analyses the plausible implications of GST on the solar sector, specifically the impact on solar tariffs due to the implementation of GST. Further, the brief provides recommendations regarding the implementation of GST in a manner that cushions the solar sector from the negative impact of the proposed tax regime.

The implementation of GST is conditional upon three GST legislations,¹ namely:

1. **Central Goods and Service Tax (CGST) bill:** the framework law related to the GST to be implemented by the Central Government. Various indirect taxes levied and collected by the Central Government are included in the CGST;
2. **Integrated Goods and Service Tax (IGST) bill:** the framework law pertaining to the taxes for movement of goods and services from one state to another and imports; and
3. **Compensation to the States for loss of Revenue bill:** the framework law pertaining to the compensation to be received by the States from the Centre for loss of revenue due to implementation of GST is included in this bill.

Upon these being approved by Parliament and the ratification of the bills by a majority of the Indian states, 31 separate State (and Union Territory) GST laws will come into effect.

The GST, in its initial form was designed to have a single tax rate with the provision of Input Tax Credit (ITC) to eliminate cascading of taxes (as explained in Section 3 below). This would have been a revolutionary reform in the existing Indian taxation regime, impacting the entire revenue collection regime. However, the GST Council (consisting of the Union Minister of Finance, the Union Minister of State for Finance and the State Finance Ministers) has recently decided to fix a 4-tier GST tax structure, with lower rates for essential items and the highest tax bracket for luxury goods, while de-meriting goods that would also attract an additional cess.

Multiple GST rates and their uncertain applicability to different equipment and services for a solar project has resulted in growing concern amongst solar project developers. Uncertainties over whether the existing tax benefits available to the solar energy sector will continue to be applicable, adds to the concerns of developers and investors alike. Further, for grid-connected solar project tenders that have been released recently, solar project developers have received contradictory clarifications from the relevant bidding authorities pertaining to applicability of GST. For example, a bid clarification provided by the Solar Energy Corporation of India (SECI) in this regard states that if GST comes into existence during the course of project, it shall be treated as new tax and shall be reimbursed at actuals subject to submission of requisite documentary evidence by the bidder, in lieu of existing indirect taxes as applicable.² However the clarification provided also states that GST pertaining to the service part of the EPC works will not be reimbursed and has to be absorbed by the bidder/ contractor. There have also been other bid clarifications provided by certain State Government authorities, which state that the government will not provide any recourse to the successful bidder to recover any additional costs that may be incurred due to applicability of GST. Due to such lack of clarity, small solar project developers have stopped bidding for solar projects.³ This is a cause for concern for India, in light of the solar power target that India has set for itself.

1 The first GST model was released in the public domain on June 14, 2016. Following the receipt of comments and suggestions from the public, the revised GST model was released on November 26, 2016.

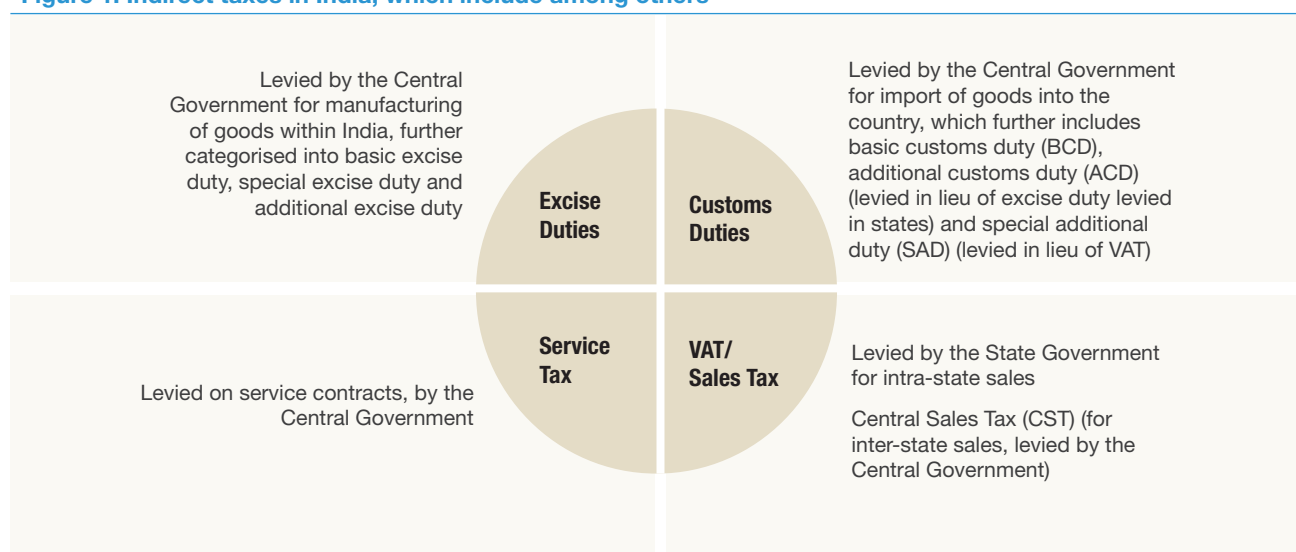
2 [http://www.seci.gov.in/upload/uploadfiles/files/merged_document_2\(2\).pdf](http://www.seci.gov.in/upload/uploadfiles/files/merged_document_2(2).pdf)

3 Based on CEEW consultations with solar project developers.

2. Existing Tax Structure

Under the existing tax regime, the Central Government has given various incentives for solar energy power projects, which include exemption from customs and excise duties on specific goods required for setting up such projects. Further, State Governments have also provided incentives in the form of Value Added Tax (VAT) at a reduced rate for renewable energy projects.

Figure 1: Indirect taxes in India, which include among others



Source: CEEW Compilation

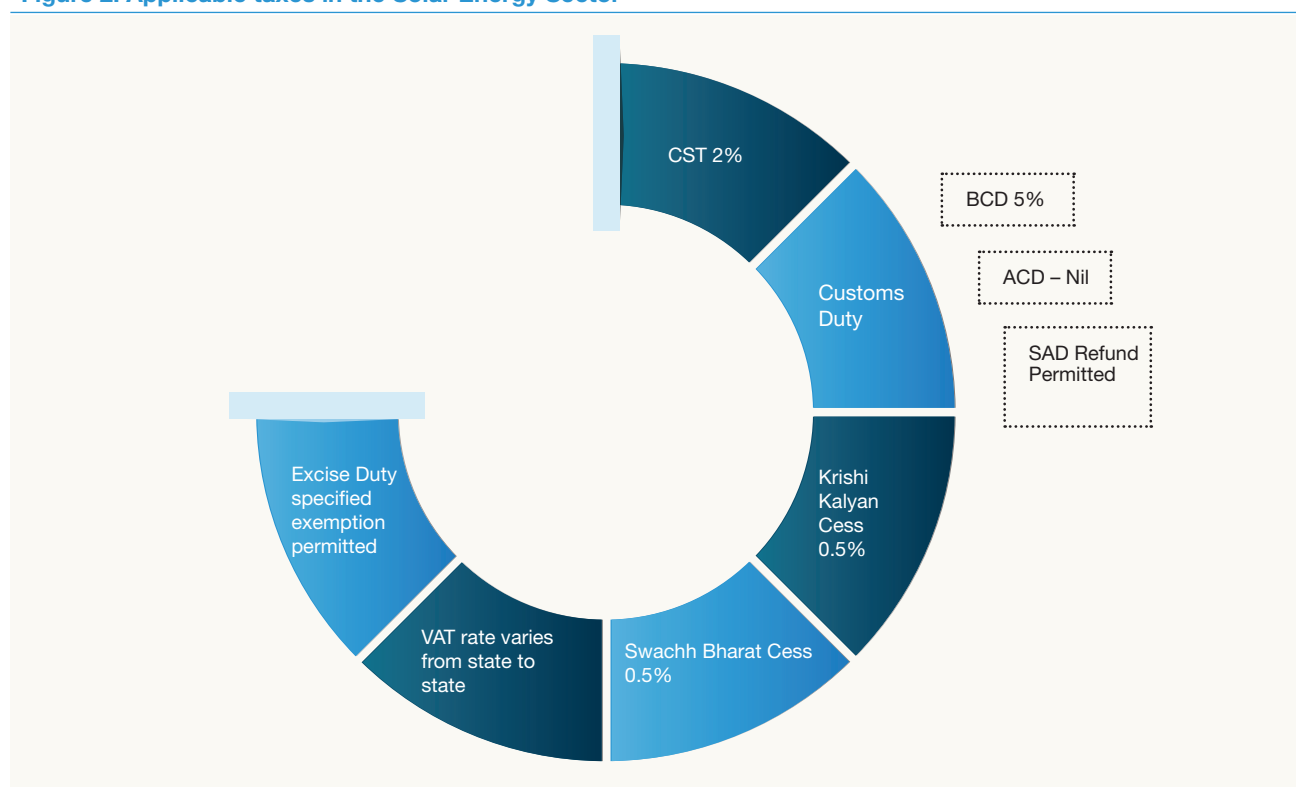
The procurement of goods and the supply chain structuring play a vital role in the solar power project costs, since the tax rates are different for procurement of goods from outside India (due to applicability of customs duty), from other states (due to applicability of central sales tax) or within the same state (due to applicability of VAT). In this brief, we have considered the procurement of the goods (apart from panels) required for setting up of a solar plant to be from intra-state sources since under the GST regime, the sales tax (including both the central sales tax and VAT) are under the ambit of the State, hence, the higher rate (being that of VAT) is considered in our calculations for sales tax, as can be seen in Table 4 below.

The renewable power sector is plagued by an “inverted duty structure”⁴ on account of taxes (customs, excise, VAT and service tax) being incurred on the input side, with the output being tax-exempt. This results in domestic manufacturers paying more taxes for manufacturing of domestic solar modules (with imported components) than in case of imported modules. Based on our interaction with solar project developers in India and as per media reports, 84% of solar cells and modules have been imported from China in the financial year 2015-16.⁵

⁴ Inverted duty structure is a situation where import duty on finished goods is low compared to the import duty on raw materials that are used in the production of such finished goods.

⁵ http://www.business-standard.com/article/pti-stories/84-of-solar-cells-modules-imported-from-china-in-fy16-116112100683_1.html

Figure 2: Applicable taxes in the Solar Energy Sector



Source: CEEW Compilation

Table 1: Tax exemption applicable for solar energy projects

Customs duty exemptions/ concessions on import of solar modules	Excise duty exemptions/ concessional rates for procurement of goods to be used in production of RE	Exemption/ concessional rate under various State VAT legislations on sale of goods to be used for generation of RE
Exemption up to 5% from basic customs duty on solar panels, cells and modules. ⁶ Exemption from additional customs duty and special additional duties provided to all items of machinery, transmission equipment, etc. used for setting up of solar power plant. ⁷	Excise duty exemption provided to all items of machinery, transmission equipment, auxiliary equipment etc. used for setting up of solar power plant. ⁸	Various states charge concessional rate of VAT at 5% on renewable energy devices and spare parts/ components and parts like Andhra Pradesh, Gujarat, etc. Certain states like Rajasthan provide full exemption to solar energy equipment and plant and machinery including parts thereof, used in generation of electricity from solar energy

Source: CEEW Compilation

6 <http://pib.nic.in/newsite/PrintRelease.aspx?relid=106389>

7 Vide notification number 31/2012 dated May 8, 2012 goods required for manufacturing of solar cells and modules have been exempted from ACD; vide custom notification number 32/2012 dated May 8, 2012 importation of plant and machinery for initial setting up of solar power projects is exempted from ACD; and SAD exemption vide notification number 102/2007-customs dated September 14, 2007, issued by the Ministry of Finance.

8 As per notification number 12/ 2012-Central Excise dated March 17, 2012, issued by the Ministry of Finance, exempted devices and systems include, among others: (i) Flat plate solar collectors; (ii) Black continuously plated solar selective coating sheets (in cut lengths or in coils and fins and tubes); (iii) Concentrating and pipe type solar collectors; (iv) Solar power generating systems; and (v) Solar photovoltaic cells.

3. Goods and Services Tax

In the current tax regime, tax is required to be paid by different entities at various stages of manufacturing, which cascades across the entire value chain of a produced good. Cascading of taxes not only increases the cost of goods for end-consumers but also affects the competitiveness of Indian manufacturing companies in the global market.

The GST Bill is structured to eliminate this cascading effect of the existing tax structure by introducing the input tax credit mechanism. Under the ITC mechanism, credits of input taxes paid at each stage would be available in the subsequent stage of value addition, which makes GST essentially a tax only on value addition at each stage.

The GST would subsume many indirect taxes imposed by central and state government in the current tax regime. Table 2 below provides a list of different taxes, which would be subsumed within GST, thereby eliminating the need to have different indirect tax legislations.

Matching Concept for Input Tax Credit

In accordance with the model GST, the claim of ITC in respect of invoices related to inward supply would be matched with details of corresponding outward supply and, in case of mismatch and where the supplier has not made the tax payment, ITC would have to be reversed with interest payable from the date of wrong availment or utilisation.

The four GST rates recommended by the GST Council are: (i) 5% (lower rate); (ii) 12%; (iii) 18% (standard rates); and (iv) 28% (higher rate). A comprehensive list of commodities falling under each rate slab is yet to be notified. Besides the four-tier tax structure, the GST Council has announced zero rating of items of basic necessity such as food grains. Approximately 50% of items forming part of the Consumer Price Index basket have been proposed to be kept in the no tax basket.

Table 2: Indirect taxes subsumed under GST law

Central Taxes	State Taxes	Taxes outside purview of GST
Central Excise Duty	VAT / Sales tax	Stamp Duty
Additional Excise Duty	Entertainment tax (unless it is levied by the local bodies).	Basic Custom Duty
Service Tax	Luxury Tax, Purchase Tax	Electricity Duty
Additional Custom Duty commonly known as Countervailing Duty	Taxes on lottery, betting and gambling	
Special Additional Duty of Customs	Entry Tax and Octroi	
Central Cesses and Surcharges related to supply of goods and services	State Cesses and Surcharges related to supply of goods and services	
	Central Sales Tax	

Source: Press Information Bureau, Government of India⁹

Since it is difficult to speculate the slab under which each relevant solar energy-linked commodity would fall, the impact of GST on solar tariffs is assessed based on two different scenarios where the relevant commodities are categorised in the four proposed slabs, based on the tax slab closest to the applicable tax rates for each commodity under the existing structure, with and without exemptions.

⁹ <http://pib.nic.in/newsite/PrintRelease.aspx?relid=148240>

4. Impact of GST on Solar Tariff

As discussed in the previous sections, the import and sale of solar power equipment is largely exempt from customs and excise duties. Further, concessional VAT rates (being nil in some states) are applicable on intra-state procurement of Balance of System (BOS) equipment such as the mounting structure, inverters, transformers, etc.

The implementation of GST is highly likely to take away the existing exemptions provided for the solar power sector (at least in terms of customs duty, sales tax and excise duties) and would therefore result in an increase in the overall cost of solar power equipment, as further explained in Section 5(i) below.

For the purpose of this study, we have compared solar tariffs under the current tax regime with the applicable rates under the GST regime, to assess the impact of GST on the solar power sector. Table 3 below summarises the component-wise breakup of capital cost required to set up a one megawatt (MW) solar power plant.¹⁰ As is evident, components of solar power plant system comprise about 85% of total project cost. Any increase or decrease in cost of system components, due to GST would directly impact the project cost.

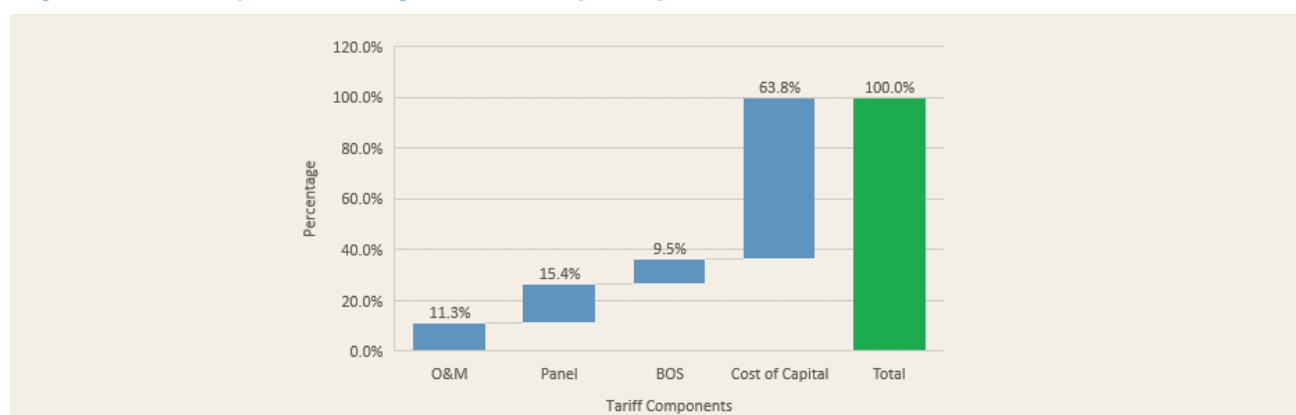
Table 3: Benchmark capital cost provided by CERC for FY 2016-17

Cost components	Cost (Lakh/MW)- in INR	Percentage share
Panel	328.39	61.96%
Land	25	4.72%
Civil & General Works	35	6.60%
Mounting Structure	35	6.60%
Power Conditioning Unit (PCU)	35	6.60%
Evacuation (Cables and Transformer)	44	8.30%
Preliminary & Pre-operative costs	27.63	5.21%
Total	530.02	100%

Source: Central Electricity Regulatory Commission

In India, the structure of solar tariff is largely dominated by cost of capital (~64%)¹¹. Hence, any increase in the requirement of capital investment for solar power plants due to GST will result in a proportional rise in the cost incurred by developers to service the investment.

Figure 3: Tariff components for a grid scale solar power plant



Source: CEEW Analysis

¹⁰ Based on benchmark capital cost published by CERC for solar project for FY 2016-17

¹¹ Kanika Chawla, Manu Aggarwal (2016), Anatomy of a Solar Tariff, CEEW Policy Brief

Methodology

The impact of the GST tax regime on the solar industry is evaluated based on the likely change in solar tariff for grid connected large scale projects. Our tariff estimation is in accordance with CEEW's prior study, "Anatomy of Solar Tariff"¹², which employs a detailed methodology to estimate solar grid tariff and share of different cost components in the final solar tariff. Cost of different system components and other project specific details are referred from benchmark documents released by Central Electricity Regulatory Commission. Further, the cost numbers were verified through interactions with solar developers. Consultations with solar developers were used as inputs to understand the entire supply chain of building a solar project in India, starting from manufacturing of different components until the commissioning of project.

All applicable taxes, which are levied by either state and/ or central governments are considered in each phase of the supply chain. The new GST rates are applied on original/actual prices of the different system components after removing the existing tax components.

Since the GST Council has determined four different GST rates, there is ambiguity on which GST rate would be applicable on different components as these components are currently exempted. However, to avoid such ambiguities, we have evaluated the impact for two different scenarios.

SCENARIO I: Assuming GST rates will be calculated based on the total applicable taxes not considering any tax exemptions.

SCENARIO II: Assuming GST rates will be calculated based on current subsidised tax rates.

Applicable GST rates under each scenario is provided in table 4.

Table 4: Calculation of applicable GST rate

Cost Heads	A		B		C= (A+B)	Based on C	Based on A
	Applicable Taxes (Current)		Tax Exemption (Current) Scenario I		Total Applicable Taxes Scenario II	GST Rate	GST Rate
Panel	5%	Customs	11%	ACD, SAD	16%	17% ¹³	5%
Land	5%	Stamp duty	0%	None	5%	5%	5%
Civil Works ¹⁴	15%	Service Tax and Cess	0%	None	15%	18%	18%
Mounting Structure	5%	Sales Tax (VAT)	6%	Excise	11%	12%	5%
PCU	5%	Sales Tax (VAT)	6%	Excise	11%	12%	5%
Evacuation	5%	Sales Tax (VAT)	6%	Excise	11%	12%	5%
Preliminary Expenses	15%	Service Tax and Cess	0%	None	15%	18%	18%

Source: CEEW Analysis

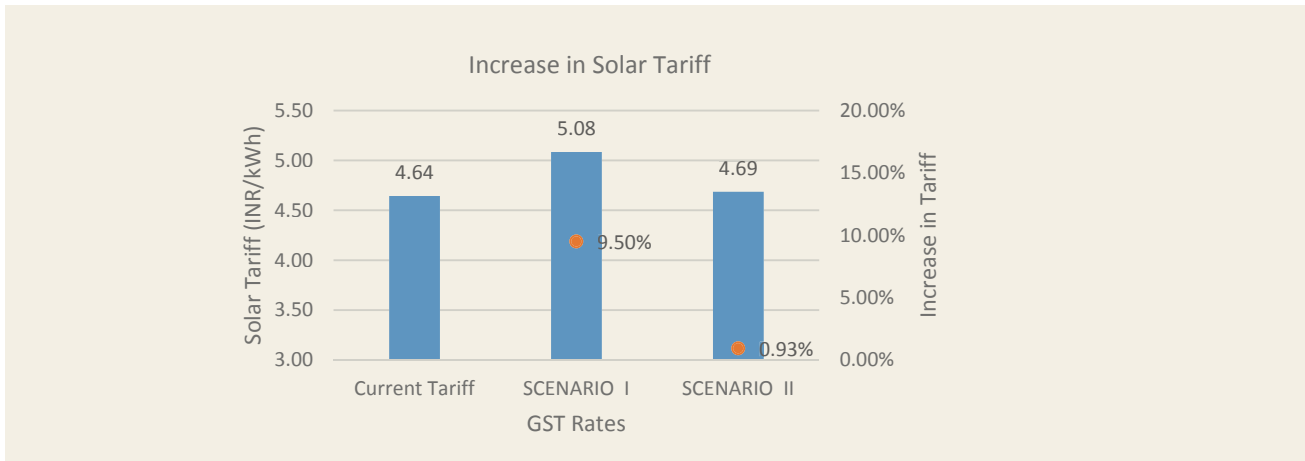
The estimated solar tariff, if we considered GST rate as per Scenario I, is about 9.5% higher than the existing tariff with the current tax exemptions. As indicated in figure 5 below, the cost of debt and equity investments contributes the most (~70%) towards the increase in solar tariffs. Of the various solar system components, any change in cost of solar panels would impact solar tariff the most (contributes ~20% towards increase in tariffs).

¹² <http://ceew.in/pdf/CEEW-Policy%20Brief-Anatomy%20of%20a%20Solar%20Tariff-17Oct16.pdf>

¹³ Since BCD is outside the purview of GST, the applicable GST rate for panels under Scenario I is 12% with 5% BCD as additional tax.

¹⁴ Civil works include costs associated with services required to be provided for the solar plant such as site levelling, geotechnical investigation, trenching, earthing and other miscellaneous works and does not include any transfer of goods.

Figure 4: Comparing existing solar tariff with solar tariff in GST regime



Source: CEEW Analysis

Similarly, with GST rate as per Scenario II (5% for system components and 18% for services), there would only be a slight increase in solar tariffs by about 0.93%. Table 5 compares the change in each component of solar tariff for grid-scale projects. The sharp increase in panel component in Scenario I (in table 5) is due to applicability of 17% tax rate as against 5% basic customs duty applicable currently. Similarly, an increase in the operation and maintenance component is also because of increased tax rate (18%) from the 15% being levied currently.

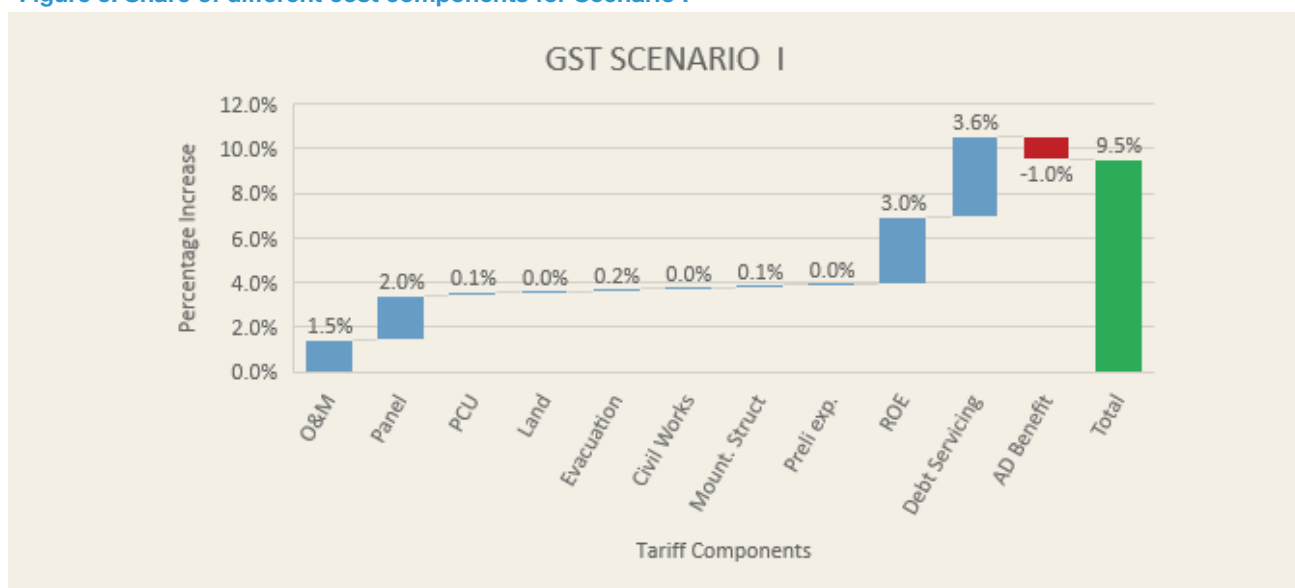
Table 5: Comparing Likely Solar Tariff Under New GST Regime

Tariff Components	Current Tariff	Scenario I	Scenario II
Panel	0.80	0.89	0.80
Operations & Maintenance	0.59	0.66	0.61
Evacuation	0.11	0.11	0.11
Power Conditioning Unit	0.09	0.09	0.09
Civil Works	0.09	0.09	0.09
Mounting Structure	0.09	0.09	0.09
Preliminary Expenses	0.07	0.07	0.07
Land	0.06	0.06	0.06
Accelerated Benefit	-0.54	-0.59	-0.54
Debt Servicing	1.80	1.97	1.82
ROE	1.51	1.65	1.52
Final Tariff	4.64	5.08	4.69
%age Change	0%	9.50%	0.93%

Source: CEEW Analysis

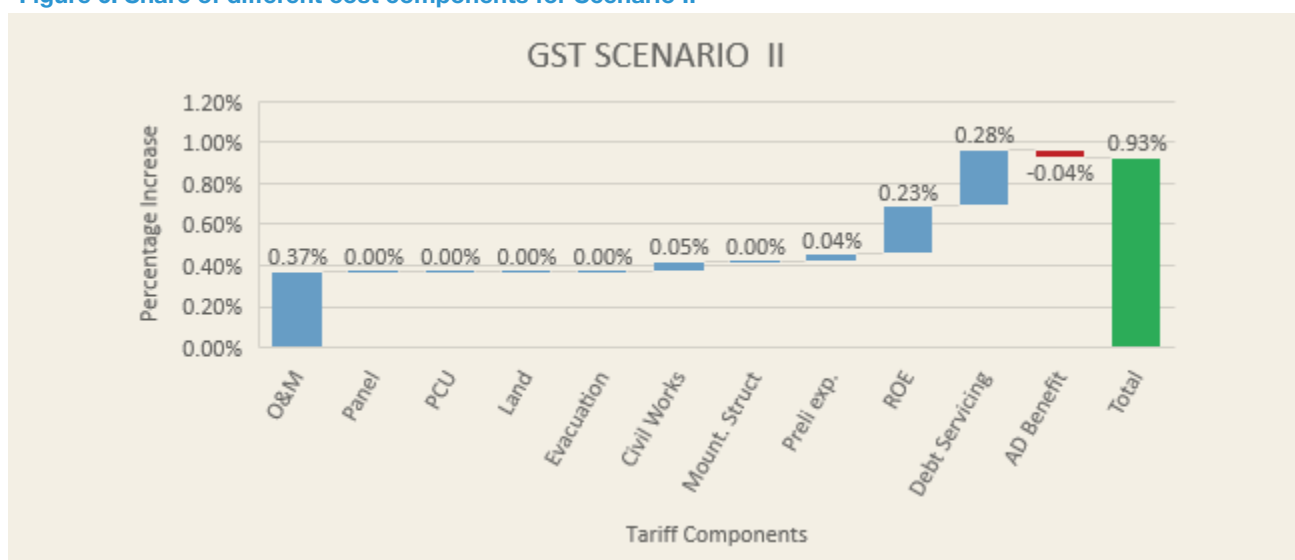
Figures 5 and 6 showcase the percentage share of different solar tariff components contributing towards a change in solar tariffs for Scenario I and Scenario II.

Figure 5: Share of different cost components for Scenario I



Source: CEEW Analysis

Figure 6: Share of different cost components for Scenario II



Source: CEEW Analysis

Further, increase in solar tariffs would be higher for the states where VAT and Entry Tax exemptions are provided for solar equipment, such as Rajasthan, than the states where VAT and Entry Tax exemptions are not provided, such as Andhra Pradesh, Gujarat, etc. In such cases, the overall change in solar tariff would be about: (i) an increase by 10.65% in Scenario I; and (ii) an increase by 2.01% in a Scenario II situation. The higher increase in tariffs is primarily due to curtailing the exemptions and the applicable GST bracket under which each of the components would fall (5%, 12% or 18%).

5. Solar Market Developments under the GST Regime

Apart from the direct impact of GST on solar tariff, there are likely to be other developments in the solar sector after the implementation of the GST regime, which could either promote or hinder solar development in India in both the short and long run.

a. Impact on solar project capital cost

As per the benchmark capital cost of solar photovoltaic projects data published by Central Electricity Regulatory Commission (CERC), the capital investment for solar power projects has decreased from INR 80.5 million per MW in 2012-13 to INR 53 million per MW in 2016-17 due to reduction in costs of modules, civil works, mounting structure, power conditioning unit, evacuation cost, etc. If the current trend continues for the next 12-14 months, the expected decrease in capital investment would offset the increased capital investment (about INR 4.5 million per MW) and solar tariffs due to the implementation of GST (in Scenario I).

b. Impact on domestic solar module prices and competitiveness of Indian solar manufacturers

India imports almost 95% of total solar modules currently required by Indian solar developers, since India only has an installed manufacturing capacity of 1.2 GW for solar cells and 5.6 GW for solar modules currently. However, the GST is envisaged to reduce the manufacturing cost of goods produced within India by: (i) eliminating cascading of different taxes across the entire value chain of manufacturing and production of solar modules; and (ii) removing certain disadvantages under the existing tax regime applicable to domestic solar module manufacturers such as the inability to claim tax credits due to the applicability of excise duty exemptions, etc. This would, overall, reduce the final price for solar modules manufactured in India, while increasing the price of imported solar modules (since under the existing regime, customs duty payable is negligible).

Box 1: Incentives provided by the Government of China to the Solar PV manufacturing sector

China's 1994 fiscal reform allowed local governments to retain local taxes and the local portion of shared taxes as their revenues and local extra-budgetary revenue was also provided. This incentivised the local governments to support local industry (including the solar sector). Various financial mechanisms such as land financing, platform financing, financial allocations, local bond financing, etc. were used to gather capital. Solar PV was a chosen industry as it generated high profit margins and led to an increase in local employment. The Chinese Government also set up special development zones to provide cheap land to the industry.

Since it is expected that there would be a reduction in the price gap between the imported modules and the domestically manufactured modules due to the implementation of GST, it would result in increased competitiveness for domestically manufactured solar modules. India would have to increase solar manufacturing capacities within the country to avail the benefits of GST. The operational manufacturing capacity is almost half of total installed capacities, with 650 MW for solar cells and about 2800 MW for solar modules. Therefore, the benefits of GST would not be felt in the solar energy sector in India at least in the near future, at least until the domestic solar manufacturing sector picks up and existing capacity is utilised. Governments across the world have employed different mechanisms to incentivise the

development of the solar manufacturing sector, the most successful of which has been China. A brief of the incentives provided by China to its domestic solar industries have been provided in Box 1.¹⁵

c. Reduced cost of BOS equipment

Implementation of the GST Bill is expected to reduce the final price, borne by the end consumer, of goods manufactured domestically, by eliminating cascading of taxes under current regime. This would reduce the cost of BOS equipment used in solar projects, such as inverters, transformer, cables etc. BOS equipment constitute about 22% of total project cost for utility scale projects. The exact extent of reduction in equipment prices can only be realised once the GST regulations are fully implemented and a rate is decided for the different components.

d. Increased Accelerated Depreciation (AD) benefits

In Scenario I, where the imposition of the GST has resulted in a significant increase in tariffs (as compared to Scenario II), one comfort that may be offered to the developers is an increased benefit due to AD (if this benefit continues to be applicable for the sector, the 2016 budget had proposed to restrict accelerated depreciation to 40%, from the current 80%, with effect from 1 April 2017). Under the current AD scheme, the developers are allowed to fully depreciate their assets in the first four years, with 80% and 16% depreciation in the first and second year respectively. Increased AD benefits due to the increase in duties is intuitive as well. A higher GST in place of various existing lower duties and taxes would increase the capital cost for solar projects. An increased capital cost should have higher AD benefit due to the early depreciation of a higher amount. For example, AD benefit increases from INR 0.54/kWh in the current tax structure to INR 0.59/kWh in the new GST regime (in Scenario I).

e. Job creation potential

Solar power projects in India are likely to create 1 million *Full Time Equivalent* (FTE) jobs by 2022 to achieve 100 GW of installed solar capacity.¹⁶ Apart from operations and maintenance related jobs, all other jobs are one-time jobs, which exist only during the deployment of solar projects. However, jobs created in the solar manufacturing segment are longer lasting. As per CEEW and NRDC's analysis, about 2.5 full-time jobs/MW could be created in the solar module production process. Implementation of GST would provide competitive advantage to Indian manufacturers in both the domestic and international market. As the domestic solar module manufacturing market grows, more and more long-term jobs would be created in India.

f. Works contract as a service

Currently, for onshore services activities under a works contract,¹⁷ both VAT and service tax is applicable. The GST specifically treats a works contract as a service and the whole value is likely to be subject to a uniform tax rate under the GST, which would result in higher tax incidence on the developer, since it does away with the low composition tax rates under the existing tax structure. However, there are other benefits in implementation of the GST structure for a works contract, such as doing away with the multiplicity of taxes and ease in contract structuring.

15 Xia Yu (2013) The Role and Incentives of Chinese Local Governments in Solar PV Overinvestment, Thesis submitted to the University of Texas at Austin

16 <http://ceew.in/pdf/CEEW-NRDC-Filling-the-Solar-Skill-Gap-Report%2012Feb16.pdf>

17 "Works contract" under the Finance Act, 1994 means a contract wherein transfer of property in goods involved in the execution of such contract is leviable to tax as sale of goods and such contract is for the purpose of carrying out construction, erection, commissioning, installation, completion, fitting out, repair, maintenance, renovation, alteration of any movable or immovable property or for carrying out any other similar activity or a part thereof in relation to such property.

6. Recommendations

a. Clarification on revision of solar tariff bids under GST regime

There are growing uncertainties around the GST implementation timeframe. Lack of clarification has forced small solar developers to opt out of participating in ongoing bidding processes and tenders. The Ministry of New and Renewable Energy (MNRE), SECI and other renewable development organisations, which have released tenders for solar projects, should provide clear guidelines regarding the applicable GST slab for solar power projects and government mechanisms to offset the negative impacts of GST (if any), as and when it is implemented. Provisions to revise bid tariffs submitted prior to the implementation of the GST regime could also be considered after assessing the potential increase in capital investment as a result of the GST regime.

b. GST rates as per current exemptions

Solar project developers have approached the government with requests to ensure that the current exemptions applicable to the sector continue so as to not negatively impact the efforts to achieve grid parity. This is the case applied in Scenario II, which results in a very minor increase in applicable tariff rate. This proposal has already received support from the MNRE, but is subject to the decision to be made in this regard by the GST Council.¹⁸

Such a measure could be adopted by the Government as a temporary measure to ensure minimal impact on the overall tax revenue collected by the government since tax revenue from the solar sector forms a small share in total tax collection (about 0.08%).¹⁹

c. Offsetting GST impact by policy instruments (VGF, AD)

Increase in solar tariff due to the implementation of the GST Bill (in Scenario I) may be partially offset by increased Accelerated Depreciation benefits (as discussed in previous sections). Further, the government may consider providing a revised Viability Gap Funding (VGF) for projects incurring increased capital investment (about INR 4.5 million per MW) due to the implementation of the GST Bill, where the increased investment requirement will be offset by the VGF applied for.

Solar tariffs and the estimated acceleration in deployment required for the solar sector in 2017 will largely depend on the manner of implementation of Goods and Services Tax regime. With the annual solar power capacity addition speculated to be more than 10 GW in 2017, it is vital that major hurdles for deployment, such as impact of GST on the sector, be ironed out as early as possible. Taking into account the recommendations listed above based on our analysis in this policy brief would ensure least negative impact on the sector.

¹⁸ <http://www.hindustantimes.com/business-news/now-lobbying-starts-for-gst-exemptions/story-xgLARVzM7IMFCOCQu0Rxsl.html>

¹⁹ As per CEEW analysis, based on current tax rates, cost of solar power projects and annual solar capacity addition.



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