

## Three zero-cost solutions for deploying renewable energy in India

*Gireesh Shrimali, Director, Climate Policy Initiative, India*

The Indian government has ambitious renewable energy targets of 100GW of solar power and 60GW of onshore wind power by 2022. However, the government is also facing large deficits and competing budget priorities, and will need cost-effective ways to achieve these targets.

Climate Policy Initiative has identified three zero-cost solutions to the government, or ways to increase deployment of renewable energy which would not require subsidies for generation and would not cost anything to the government. These zero-cost solutions, when accompanied by support policies that would remove other, non-cost related barriers, could lower the overall cost of meeting India's renewable energy targets and hasten deployment of renewable energy.

In all three solutions, the cost of renewable energy is compared to a baseline that represents the fossil fuel energy that additional renewable energy would likely replace, typically called the marginal fossil fuel. The government would need to subsidize additional renewable energy only if it is more expensive than the baseline.

### **First, for utility scale renewable energy, focus on rapid deployment of onshore wind power.**

The [cost of wind power is already competitive](#) with the cost of the imported coal, which is the fuel it is most likely to replace, and thus does not require government subsidies. Wind power, at a levelized cost of electricity of 5.87/kWh, is already cheaper than imported coal, which has an unsubsidized levelized cost of electricity of INR 6.81/kWh. The technical potential of onshore wind power is estimated to be [at least 100GW](#). Thus, 100GW of onshore wind power, which is higher than the 2022 target of 60GW, is a zero-cost solution for the government.

To ensure that India reaches this capacity of onshore wind power, the government could encourage rapid deployment through supporting policies which address [non-cost related barriers for project developers](#), such as land acquisition, resource assessment, transmission interconnection, and guaranteed offtake.

### **Second, for distributed renewable energy, focus on rapid deployment of rooftop solar power.**

The unsubsidized levelized cost of energy from rooftop solar power, at less than INR 7-8/kWh, is already cheaper than the retail rate of electricity for many industrial, commercial, and residential consumers, which can be up to INR 10/kWh (or even higher). Bridge to India, a consulting firm specializing in solar energy, estimates that the realizable potential of rooftop solar PV is at least [57GW by 2024](#). Though the full zero-cost potential would require further investigation, based on preliminary analysis by the Rooftop Solar Policy Coalition, approximately 15GW of rooftop solar PV is likely to be another zero-cost solution for the government.

To ensure that India reaches this capacity of rooftop solar PV, the government could encourage deployment through supporting policies such as [net metering, which would allow homeowners and](#)

[project developers to export electricity from rooftop solar power](#). In addition, innovative business models [like Solar City in the U.S. would enable financing of the initial costs of solar panels](#). The government could help create the market by facilitating these models, and also by establishing reasonable technology performance standards and informational platforms to ensure product and business quality.

**Third, for off-grid distributable renewable energy, focus on rapid deployment of off-grid solar power.**

We should compare the cost of off-grid distributed renewable energy to that of kerosene or diesel generation, which is the fuel it is mostly likely to replace. Despite the increase in the levelized cost of off-grid solar PV due to backup battery requirements, distributed solar PV is still cheaper than diesel generation in many cases. The realizable potential of distributed off-grid solar PV is estimated to be [15GW by 2022](#); while additional research is still needed, a significant fraction of this is likely to be another zero-cost solution for the government. Similar to rooftop solar PV, business innovation to finance upfront costs, along with a supportive policy environment, can encourage the deployment of off-grid solar PV.

In addition to these three zero-cost solutions, there are other ways to significantly reduce the cost of government support for renewable energy. One way is to shift policies to reduced cost, extended tenor debt. For example, for utility scale solar power, this could reduce the cost of government support by [up to 96%](#).

These are some options available to India that will help it accelerate renewable energy deployment at a zero or low cost for the government. In a world of tight budgets and ambitious dreams, these opportunities are worth considering.