



# Fact Sheet

## Rationalizing Incentives for Solar Photovoltaic (PV) in Pakistan

The recent surge in rooftop solarization in Pakistan has raised concerns among power distribution companies about system reliability and increased capacity payments.

The government is considering several changes to current energy policies, including reducing buyback rates, limiting system sizes, and transitioning from net metering to net billing.

However, even with the proposed changes, the payback period for 5-25 kilowatt (kW) distributed solar PV systems remains below the 5-year threshold.



A mere 50 megawatts (MW) of net-metered solar capacity was added between 2016 and 2019. However, consistently high electricity tariffs and a substantial decline in solar panel prices have led to a recent surge in solar PV additions.



Since 2022, net-metered solar PV installations have nearly doubled, with 764MW installed in 2023.



In June 2024, Pakistan's on-grid net-metered solar PV capacity was approximately 2200MW.



Pakistan's abundant solar potential offers specific yields of 3.8 kilowatt-hours per kilowatt peak (kWh/kWp) to 6kWh/kWp.



For smaller system sizes such as 5 kilowatt (kW) or 7.5kW, the cost per kW is higher and ranges between US\$592/kW to US\$466/kW.



As the system size increases, economies of scale apply and the cost per kW decreases to approximately US\$340/kW for a 25kW system.



For on-grid distributed rooftop solar PV installations, the biggest factor contributing to the overall cost of generation is the solar panel cost, followed by inverter and wiring costs.



### Challenges

Rapid solarization offers multiple benefits such as the supply of cost-competitive, clean energy to the grid, and a reduction in the daytime peak for the national grid.

However, the power transmission and distribution utilities are concerned that a higher penetration of distributed solar in the system could put the distribution infrastructure at risk of failure and increase capacity payments for non-net-metered consumers. Therefore, the government is considering scaling back some incentives offered by the current net metering regulations.

These may include:

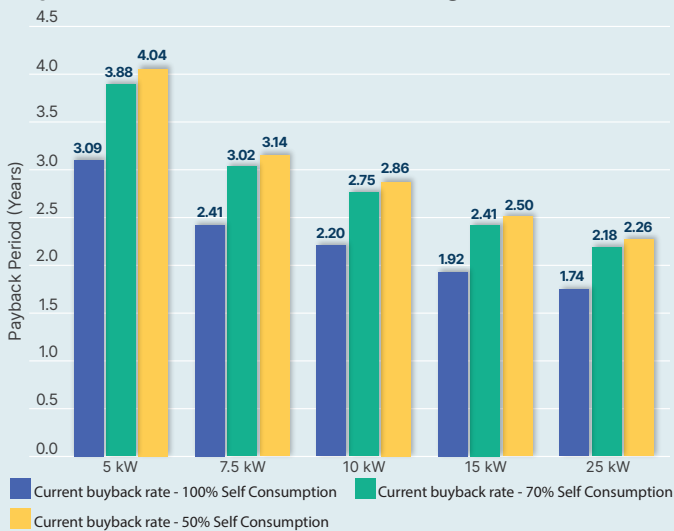
1. Conversion of the existing net metering mechanism to a gross/net billing scheme, where separate rates would be charged for electricity imported from and exported to the grid
2. Revision of buyback rates to a lower value
3. Creation of a separate tariff category for net-metered consumers
4. Limiting the existing system size allowance for net-metered consumers



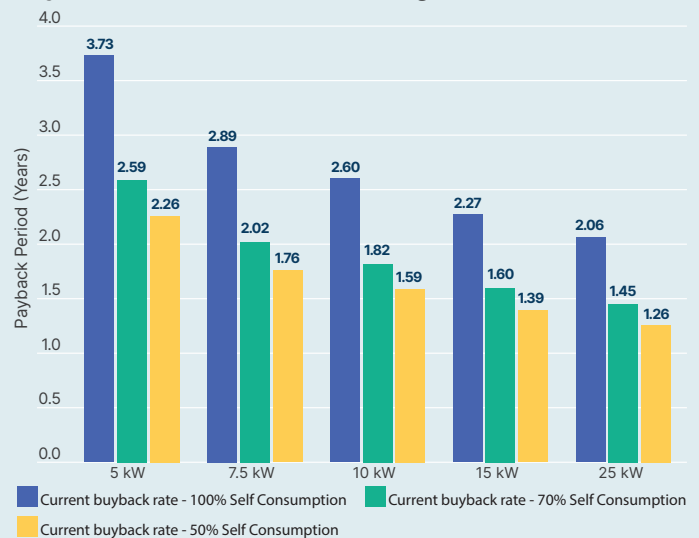
## Analysis

- Under the current mechanism, which offers the prevailing National Average Power Purchase Price (NAPPP) of PKR 27 per kilowatt hour (kWh) as the buyback rate, the relatively higher per kW cost of smaller 5kW and 7.5kW systems results in extended payback periods ranging between 2.4-4 years. As the system size increases, the payback period decreases, with a 25kW system recording the shortest payback period of 1.74 years.
- Reducing the buyback rate to the National Average Energy Purchase Price (NAEPP) of PKR 9.69/kWh could lead to a 10%–56% increase in the payback period, depending on the level of consumption and system size. Consumers with smaller installations and lower consumption experience longer payback periods.
- Reducing the buyback rate to PKR 15/kWh would only result in a 6% increase in the payback period for consumers with 100% self-consumption, while for lower-consumption profiles it may increase by 25%.
- Shifting to a net billing mechanism would increase the payback period for consumers with a higher self-consumption ratio but could incentivize the installation of oversized systems.

### Payback Period Under Net Metering



### Payback Period Under Net Billing



## Key Recommendations

- A moderate reduction in buyback rates
- Restriction of system size allowance if net billing were to go into effect
- A gradual discontinuation of the current net metering policy every quarter to offer a transitional period to new and existing beneficiaries
- Limitations on system size to ensure equitable solarization and to protect the distribution infrastructure against overloading risks
- Increased real-time monitoring of the distribution infrastructure through investment in performance monitoring systems
- Installation of Advanced Metering Infrastructure (AMI) at the consumer end for two-way communication between DISCOs and end-users

