

MEASURING SOLAR PANEL USER SATISFACTION IN PAKISTAN

*A SAMPLE SURVEY OF NET-METERING
CONNECTION HOLDERS*



INTRODUCTION AND OBJECTIVES

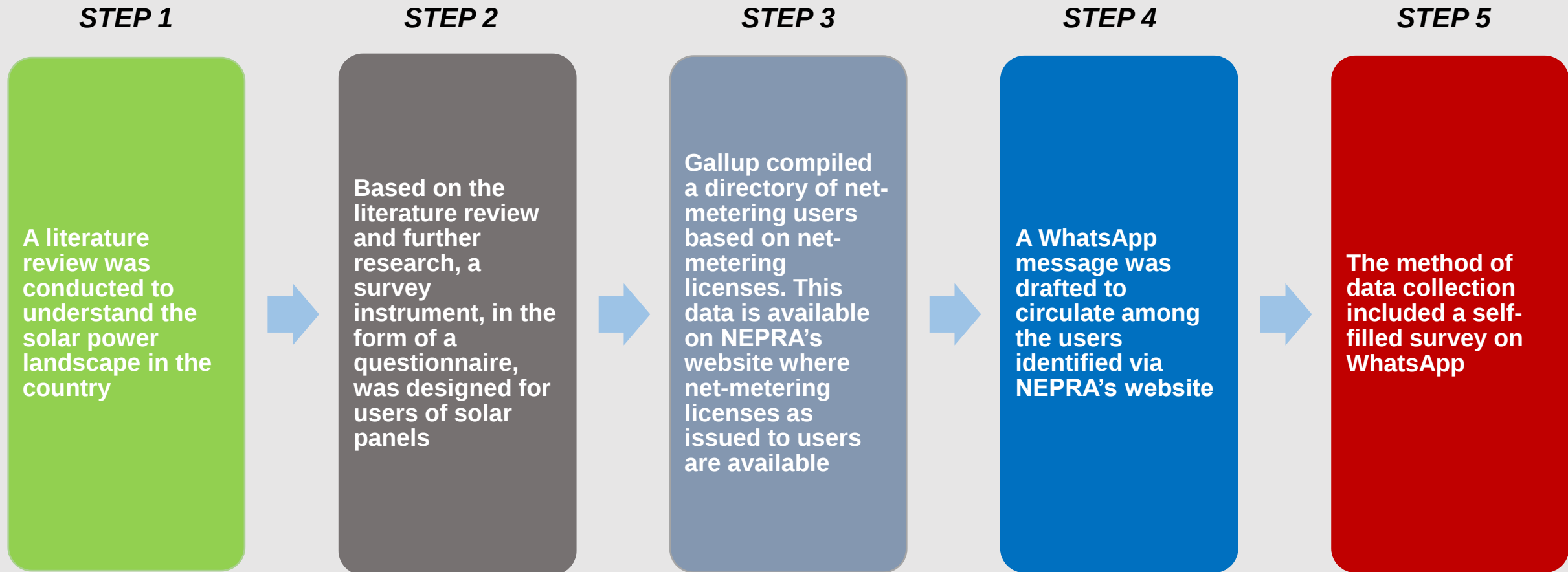
INTRODUCTION

- Resolving the energy crisis requires a substantial investment both in generation as well as in distribution and transmission
- With regulations such as those for net metering passed in 2015, there has been a recent shift towards the adoption of solar home systems (SHS) as a means to curb exorbitant electricity bills at the household level in more accessible parts of the country
- Gallup Pakistan conducted a survey on understanding the user satisfaction of solar panel users in Pakistan from January to March 2023

OBJECTIVES

- The objective was to understand the particular problems faced by solar panel users during the process from pre-installation to post-installation and use
- Based on the learnings from the survey, we hope to additionally suggest potential ways to improve the customer experience, reduce the pain points experienced by users and to reduce what is called sludge in the user experience of getting both solar equipment as well as net metering
- The findings can be useful for relevant stakeholders ranging from solar companies, government authorities, potential customers as well as other private organizations working on similar research

*Total number of survey respondents = 152**



**Disclaimer: Respondents only include those who got a net-metering connection. They may or may not represent the general or average solar panel user.*

ANALYTICAL INSIGHTS



ANALYTICAL INSIGHTS

Although 4 in 5 respondents are satisfied with the timeliness of delivery and installation of solar panels, post-installation, the satisfaction level with the aftersales services is lower (65%) – While this may vary from company to company, generally aftersales service is one aspect which companies can work to improve

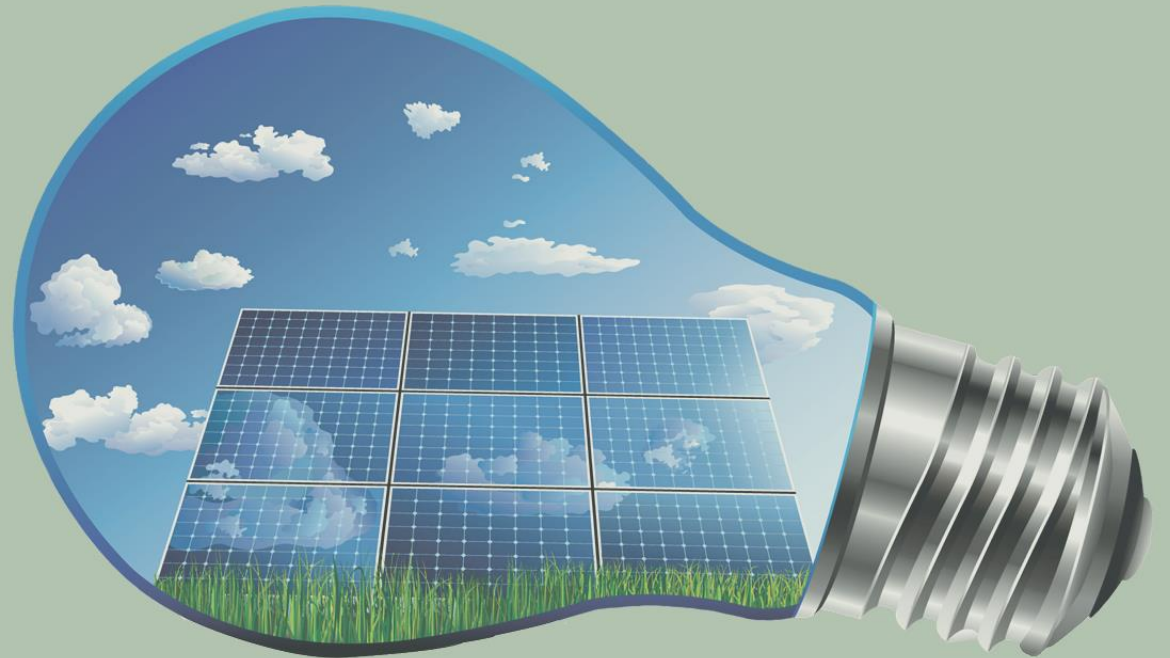
Approximately one third of the respondents unfortunately had to pay bribe money to the government department during the net-metering process – This is a significant percentage which highlights the need for accountability and more transparency in net-metering processes

7 in 8 respondents are satisfied with both, the installation as well as the overall performance of the solar panels – Generally, it can be inferred, that the experience has been mostly positive – 5 in 6 respondents are quite satisfied with the extent to which their electricity bill has been reduced

Although the electricity bill is cited as one of the most popular reasons to install solar panels, there was a significant portion of respondents (42%) who also mentioned that "Living Green" was a reason they felt compelled to switch to solar technology. This possibly represents an attitudinal shift towards more sustainable sources of power generation

4 in 5 respondents are not willing to compromise on the quality in favor of cost-saving solar panels – To the majority, the current cost of the solar panels installed is worth the investment

EXECUTIVE SUMMARY



EXECUTIVE SUMMARY

Information about Solar Panels:

- 89% respondents know a fair amount and/or quite a lot about solar panels
- 36% found out about Solar Panels through personal references, 18% through the internet, 14% through professional sources and 13% through social media platforms

Installation Process:

- The electricity bill and living green were cited as 2 of the most popular reasons for choosing to install solar panels
- Across the country more than 80% Pakistanis were satisfied to a great extent with the installation process
- 88% respondents felt that the installers had made the installation process convenient for the users
- 81% were satisfied and very satisfied with the delivery and installation time
- 9 in 10 respondents said that the installer explained the guarantees and warranties linked to the system, to them.
- 3 in 4 respondents said that the installers explained the complaints procedure to them
- 83% of the respondents who had installed Solar Panels claimed that the installer provides after-sales services
- 12% of the respondents dissatisfied with the installation process because the quality of work was not up to mark
- 6% were dissatisfied with the installation process because the system was not installed on time, and the company charged full money in advance, still delayed by 2 months

User Understanding of Solar Equipment Installed:

- 80% of the respondents installed Solar Panels in their home between the years 2019 and 2021
- Approximately 60% of the solar panel users don't have a battery-powered system
- 30% of the respondents unfortunately had to pay bribe money to the government department while getting their net metering connection
- On average, it took respondents 13 weeks to get their net-metering connection

System Performance and Maintenance:

- 88% of the respondents are satisfied as well as very satisfied with the overall performance of the solar panels installed in their homes
- 9 in 10 respondents are satisfied to a somewhat or great extent with the quality of the system installed in their homes
- 4 in 5 solar panel users are satisfied with the performance in financial terms
- 83% respondents are satisfied with the extent to which Solar has cut their electricity bills
- 65% satisfied and very satisfied with the aftercare services provided by the installer
- 4 in 6 respondents are more conscious of their electricity use after installing solar panels
- 4 in 5 respondents are likely and very likely to recommend solar panels to someone in their network
- 6 in 7 know of a friend or relative who has installed a solar system because of their example
- Majority (81%) are not willing to compromise on quality in favor of cost saving solar panels

SECTION 1: INFORMATION ABOUT SOLAR PANELS



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89%

respondents know a fair amount and/or quite a lot about Solar Panels



36%

found out about Solar Panels through personal references, 18% through the internet, 14% through professional sources and 13% through social media platforms

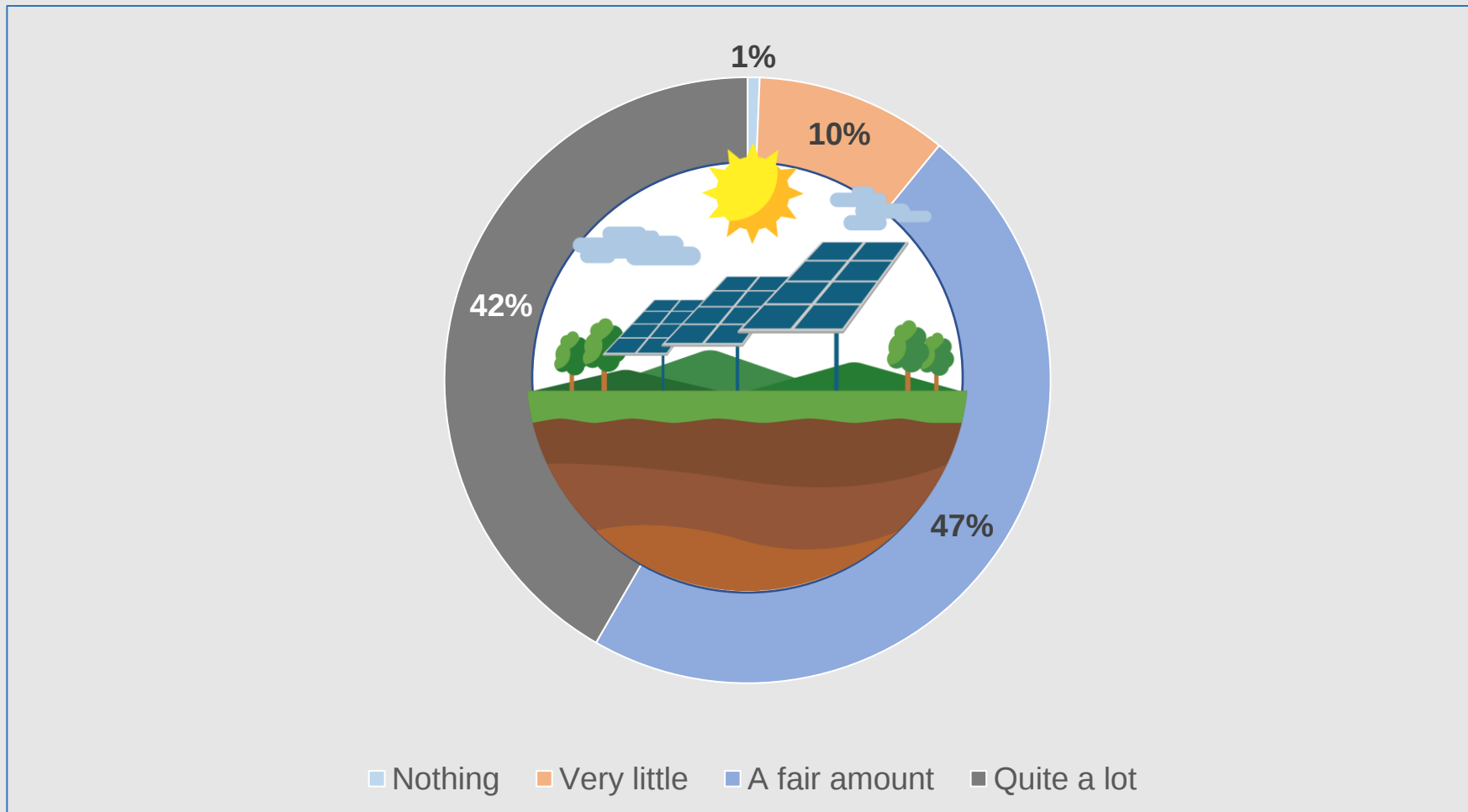


Approximately half the respondents identified Internet Search Engine and Professional References as the top most helpful sources for learning about solar panels

**Disclaimer: Respondents only include those who got a net-metering connection. They may or may not represent the general or average solar panel user.*

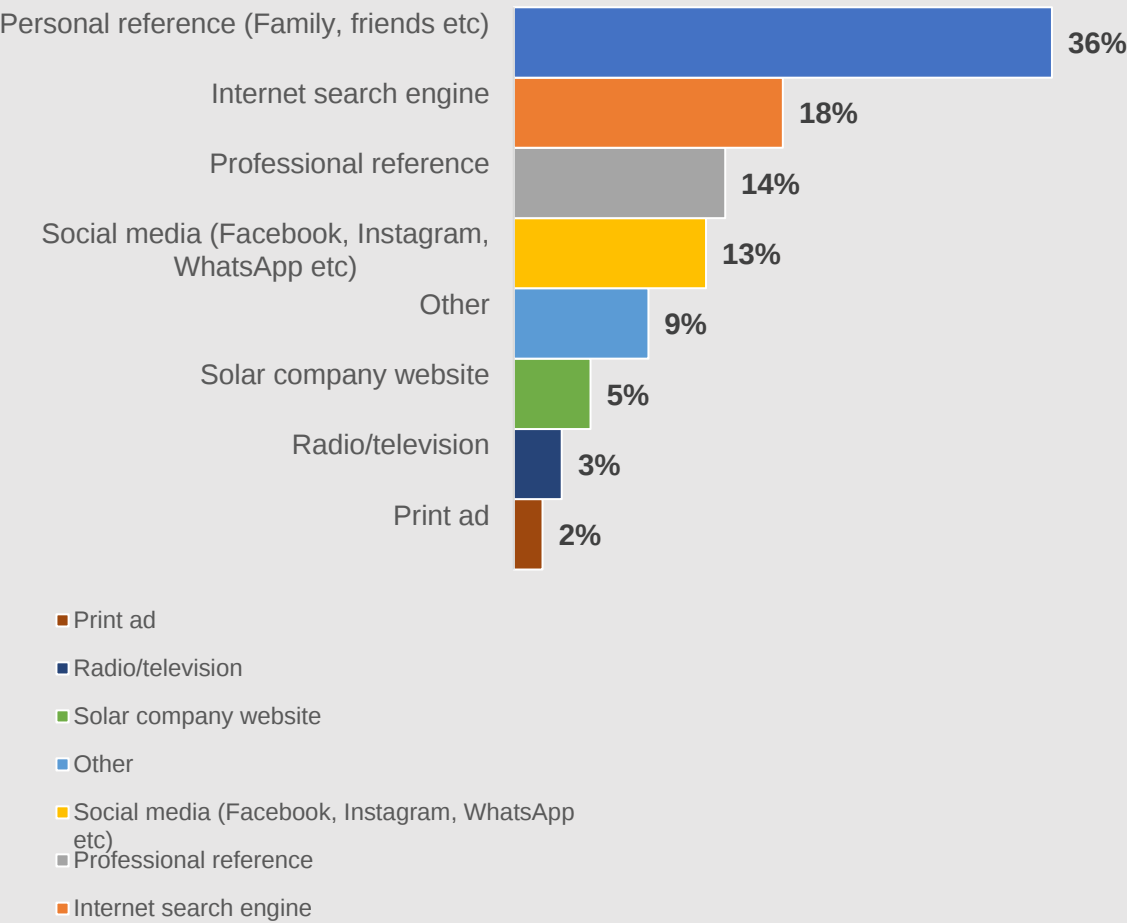
Approximately 90% respondents have knowledge ranging from a fair amount to quite a lot on solar panels

Q. How much do you already know about Solar Panels?

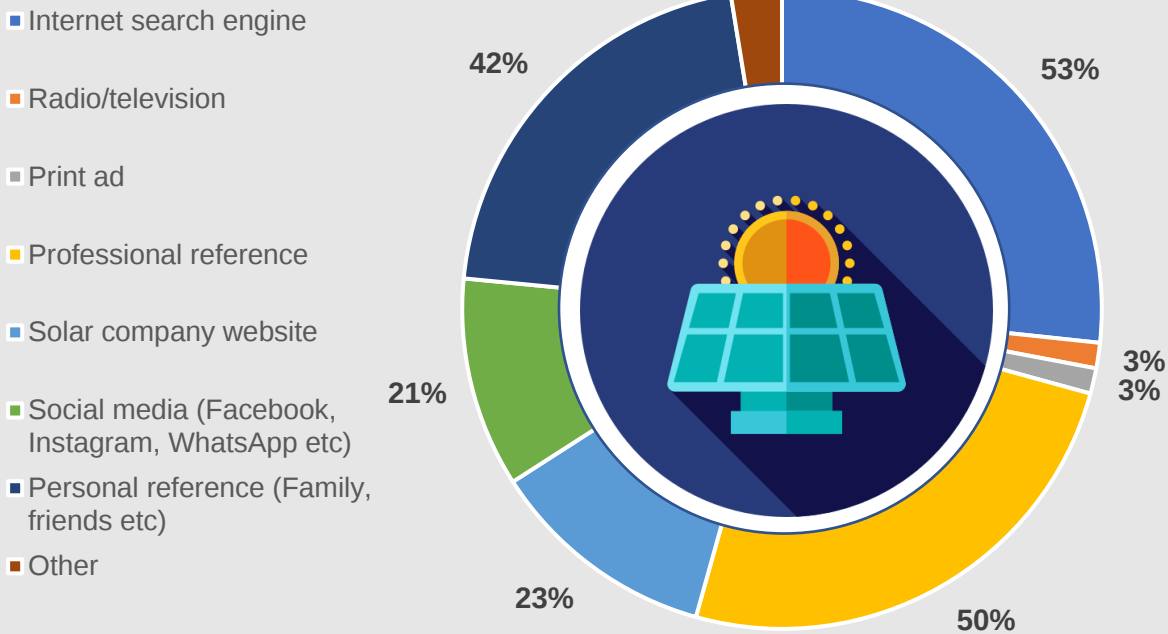


Approximately half the respondents identified Internet Search Engine and Professional References as the top most helpful sources for learning about solar panels ¹²

Q. How did you find out about Solar Panels?



Q. Which sources were the most helpful in helping you learn about Solar Panels?*



1. *Percentages don't add up to 100 because more than one option could be selected.

SECTION 2: INSTALLATION PROCESS



GALLUP
PAKISTAN

Affiliated with Gallup International

Pakistan's Foremost Social Research Lab

SECTION 2: INSTALLATION PROCESS



The electricity bill and living green were cited as 2 of the most popular reasons for choosing to install solar panels



80%

Across the country more than 80% Pakistanis were satisfied to a great extent with the installation process



88%

respondents felt that the installers had made the installation process convenient for the users



81%

were satisfied and very satisfied with the delivery and installation time



9 in 10 respondents said that the installer explained the guarantees and warranties linked to the system,

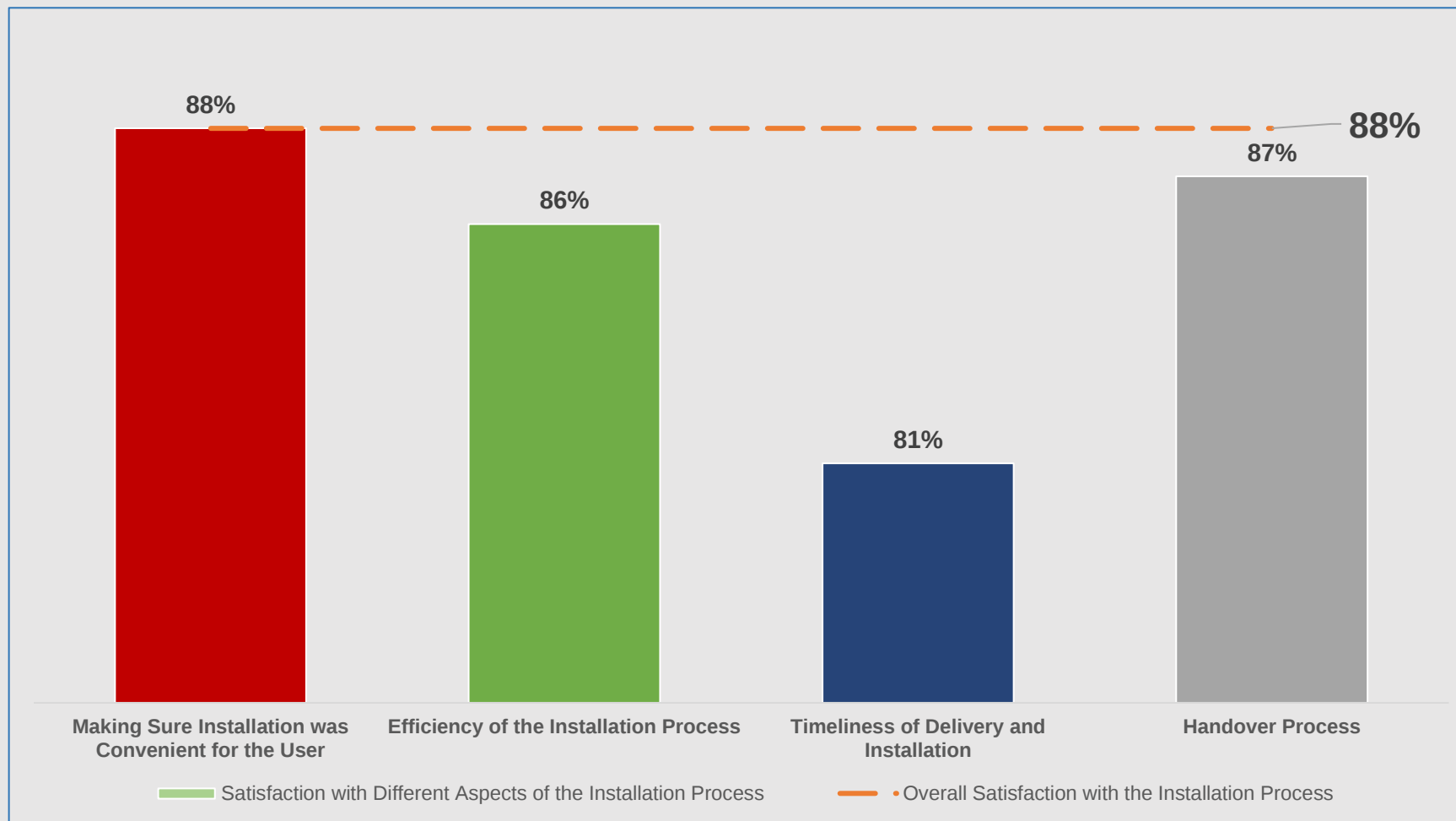


12%

of the respondents dissatisfied with the installation process because the quality of work was not up to mark

SECTION 2: INSTALLATION PROCESS TOPLINE SATISFACTION DATA

Overall Satisfaction with the Installation Process + Satisfaction with Different Aspects of the Installation Process**

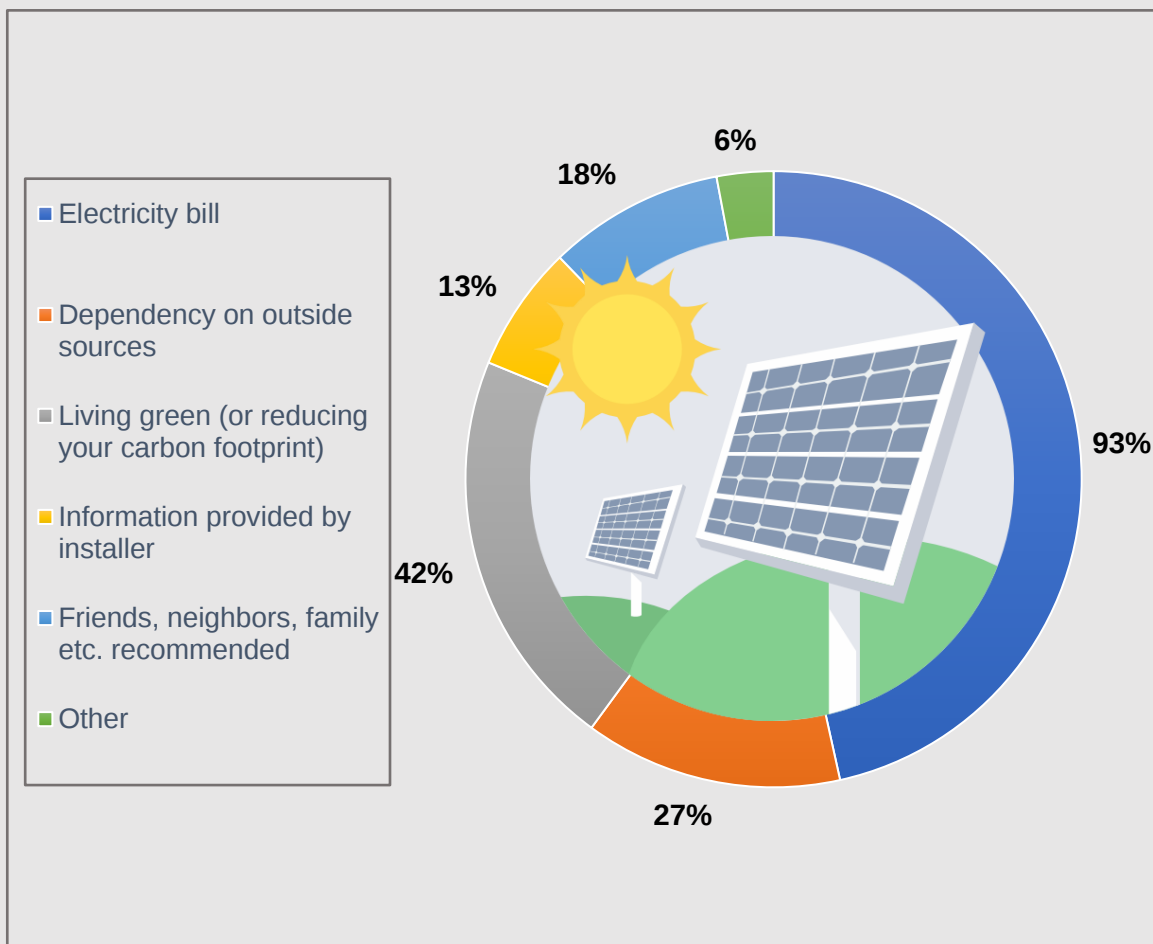


Respondents had the highest satisfaction with the Convenience of the Installation Process (88%) and the lowest satisfaction with the Timeliness of Delivery and Installation (81%)

In the following slides, we provide an individual breakdown of each of the aspects

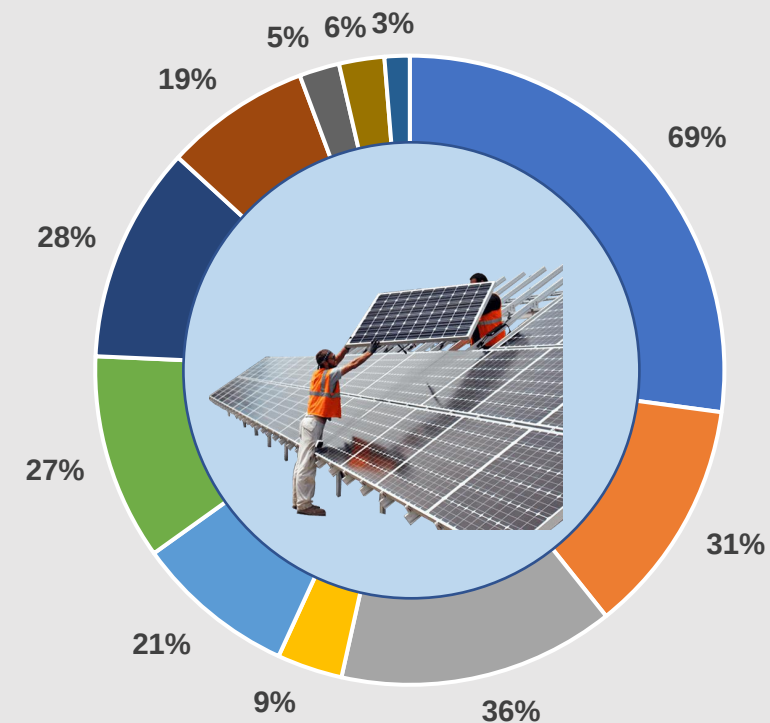
The electricity bill and living green were cited as 2 of the most popular reasons for choosing to install solar panels

Q. What factors encouraged you to install Solar Panels?*



Q. What were your reasons for your choice of installer?*

- They were experienced/knowledgeable
- They were friendly/helpful
- They were the best value for money
- They could complete when it suited me
- They provided more information
- Their product seemed better
- They were recommended to me
- I saw an example of their work locally
- They were the only one I considered
- They were the cheapest
- Others

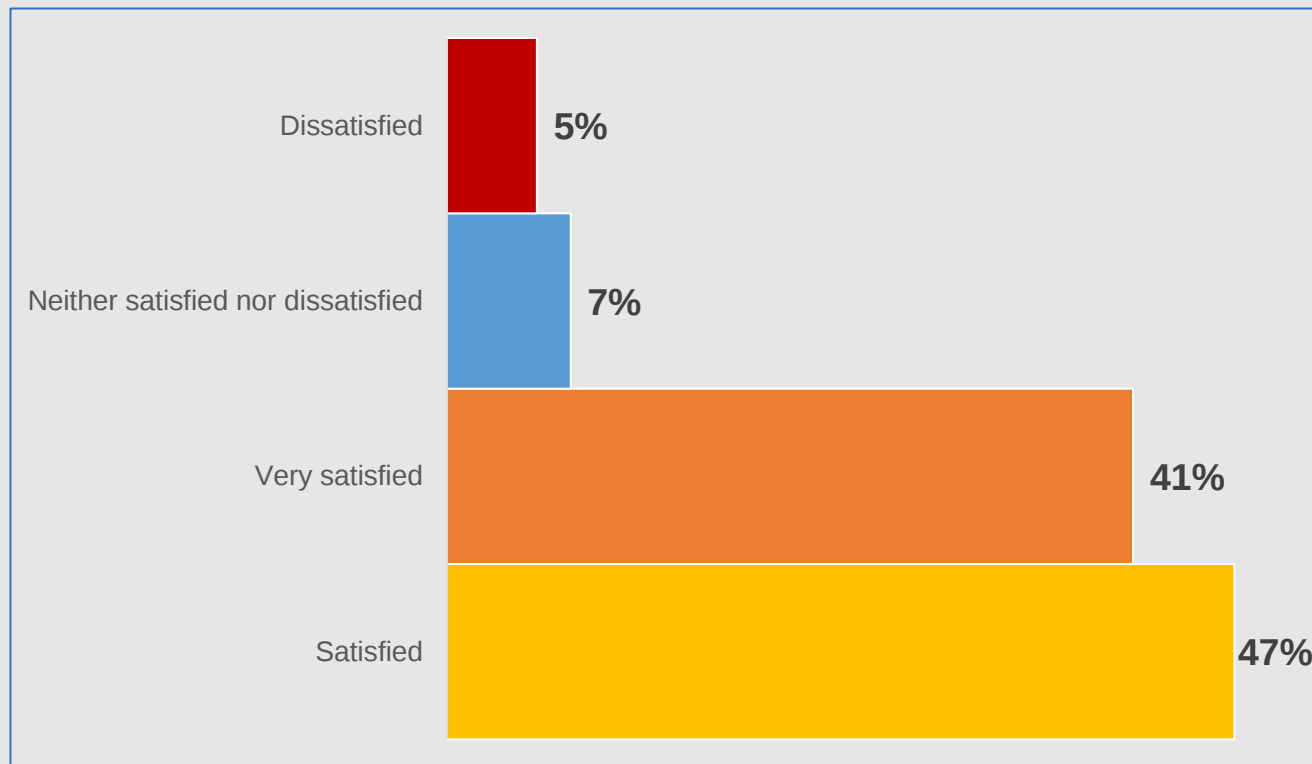


Measuring Solar Panel User Satisfaction in Pakistan

1. *The category other includes: Don't Have Electricity in our Area, Loadshedding, Economic Situation of the Country, Continued Supply/Hedging Against Inflation. Percentages don't add up to 100 because more than one option could be selected. 2.** Installer Mix includes the following: Sky Electric, M/S CATKIN Islamabad, Etsaq and EG Power. Percentages don't add up to 100 because more than one option could be selected

Across the country more than 80% Pakistanis were satisfied to a great extent with the installation process

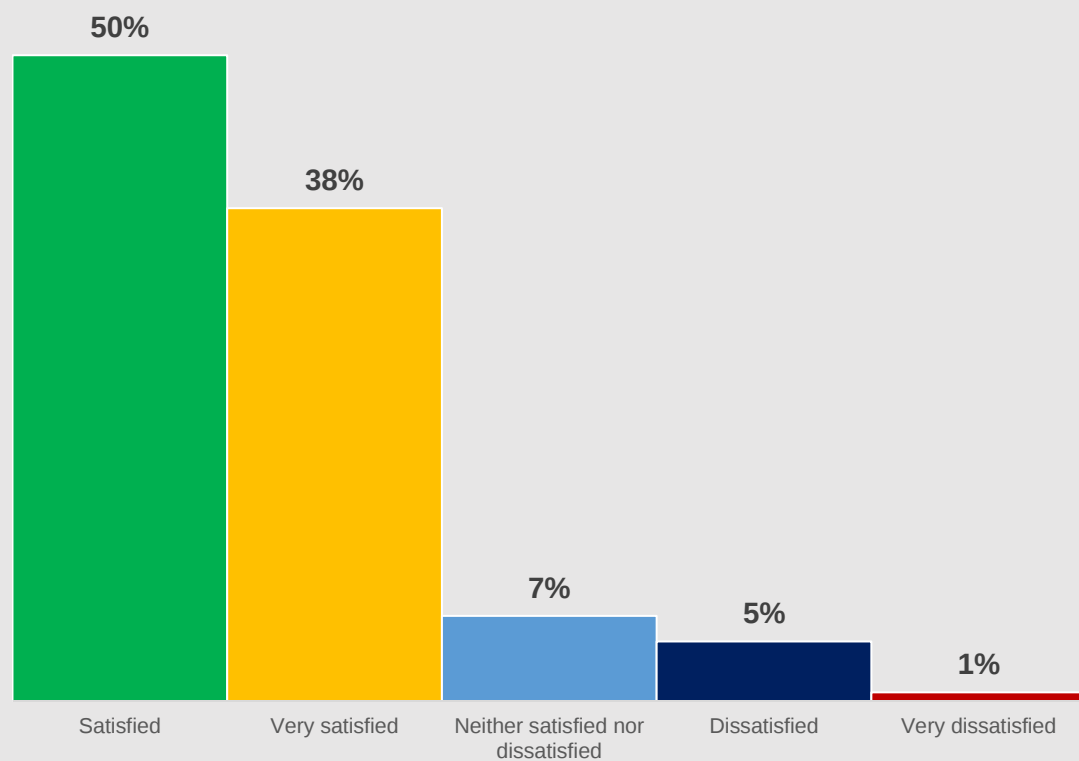
*Q. How satisfied/dissatisfied were you with the installation process?**



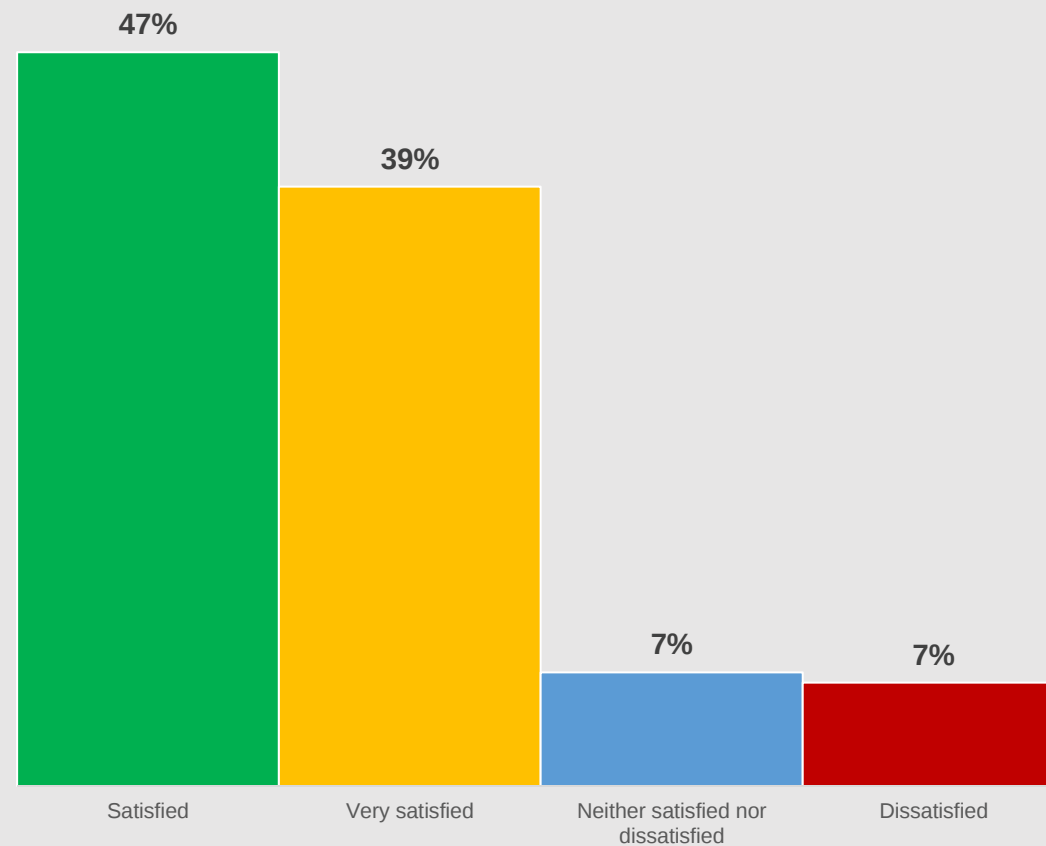
1. *Values for Extremely Dissatisfied excluded since values = 0%.

88% respondents felt that the installers had made the installation process convenient for the users

Q. What was your satisfaction level with following aspects of the installation process? – Making sure Installation was Convenient for the User



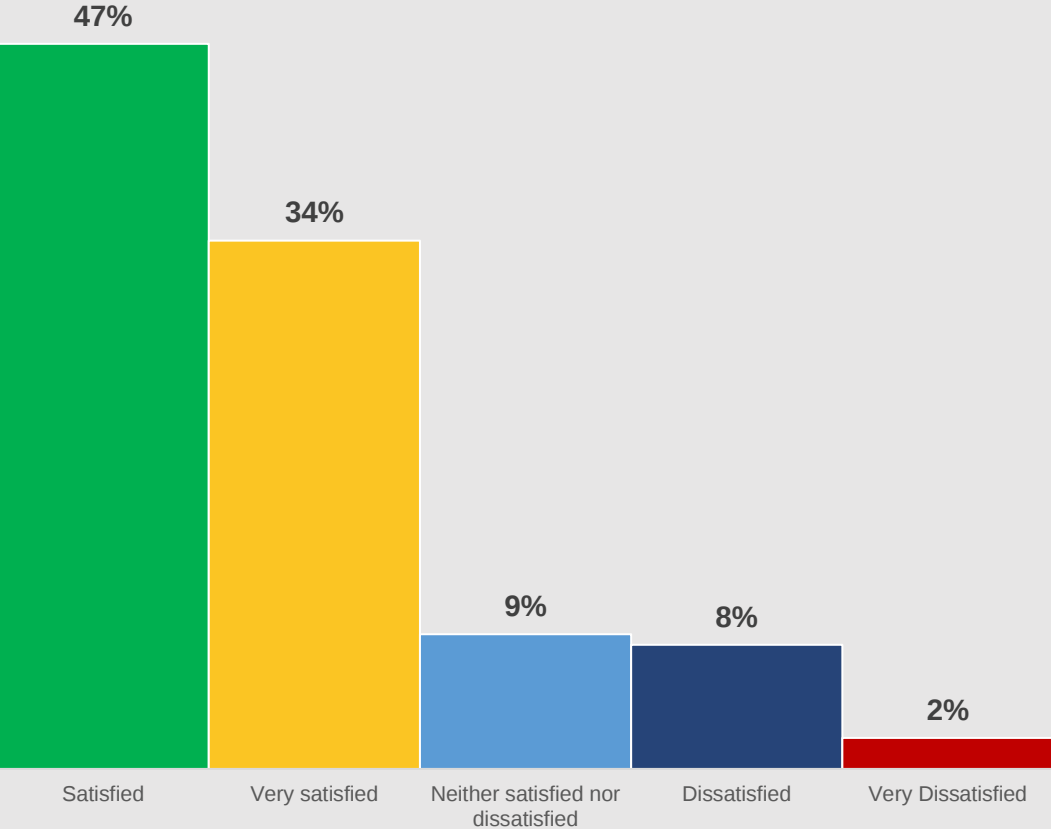
*Q. What was your satisfaction level with following aspects of the installation process? – Efficiency of Installation Process**



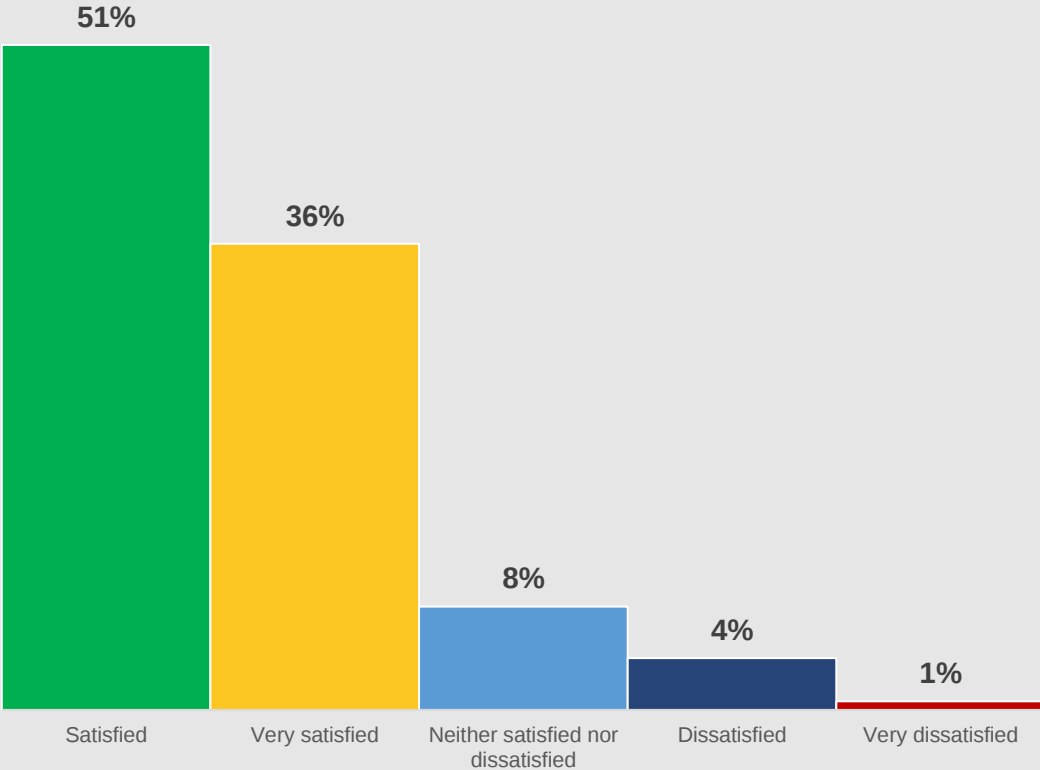
1. * Values for Extremely Dissatisfied excluded since values = 0%.

Overall satisfaction with the delivery and installation time was generally high across and majority of the respondents were also satisfied with the handover process 19

Q. What was your satisfaction level with following aspects of the installation process? – Delivery and Installation on Time

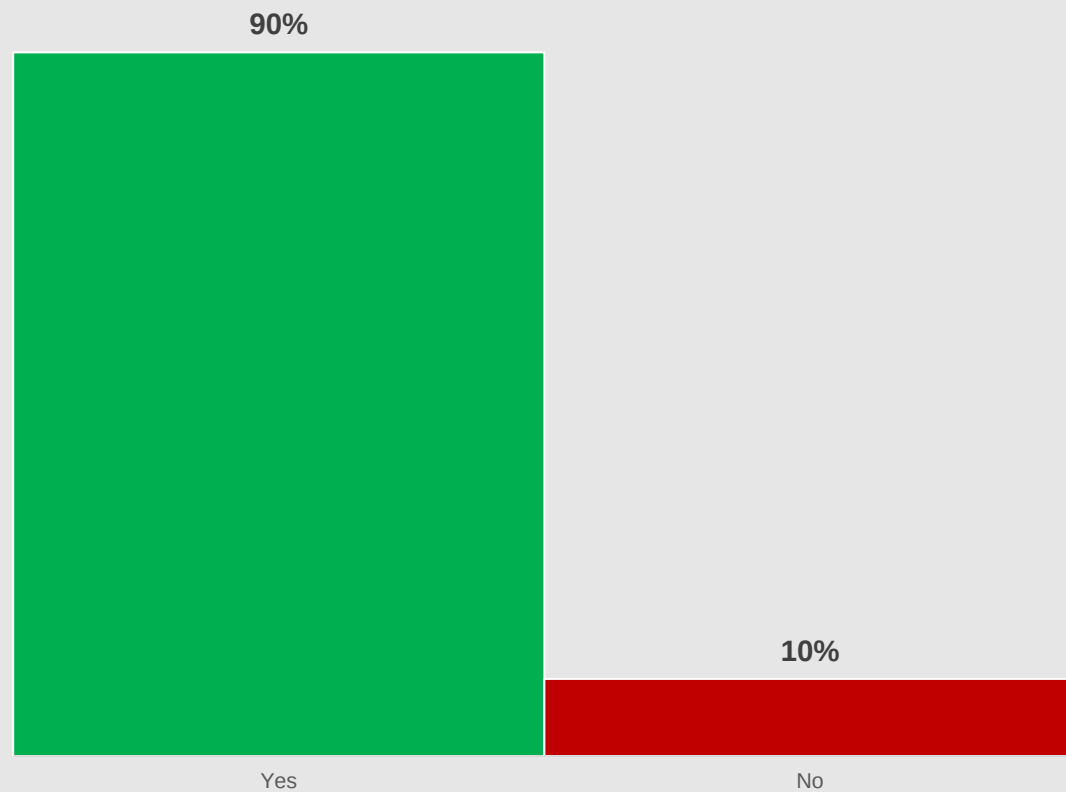


Q. What was your satisfaction level with following aspects of the installation process? – Handover Process

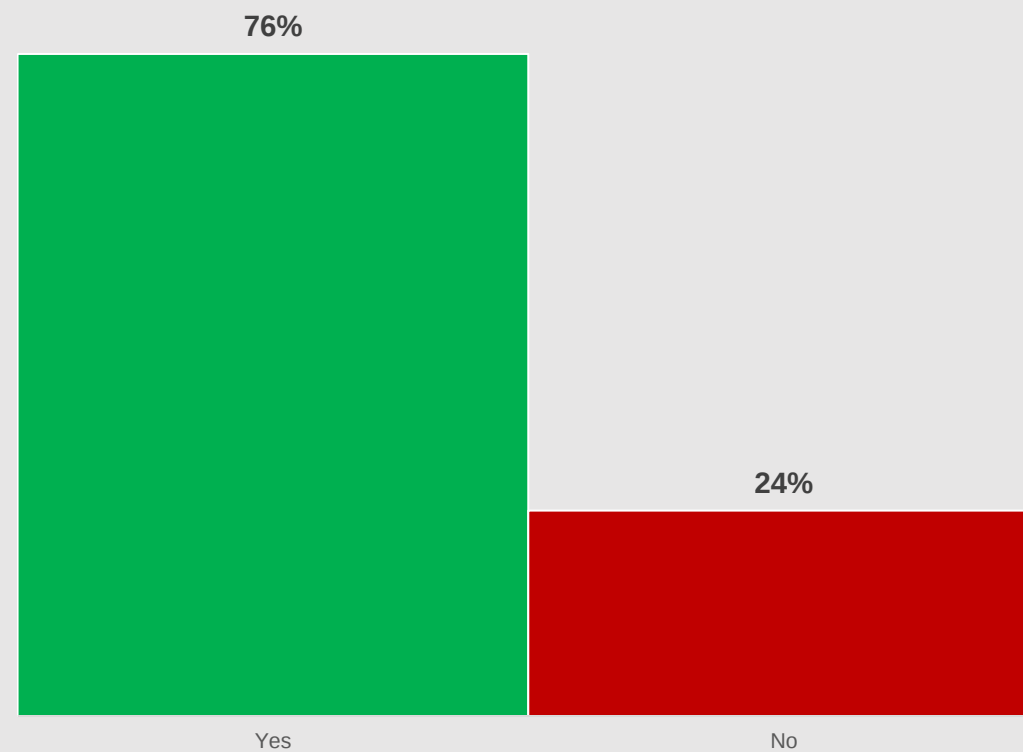


9 in 10 respondents said that the installer explained the guarantees and warranties linked to the system, to them. 3 in 4 respondents said that the installers explained the complaints procedure to them

Q. Did the installer explain the guarantees and warranties linked to the system?

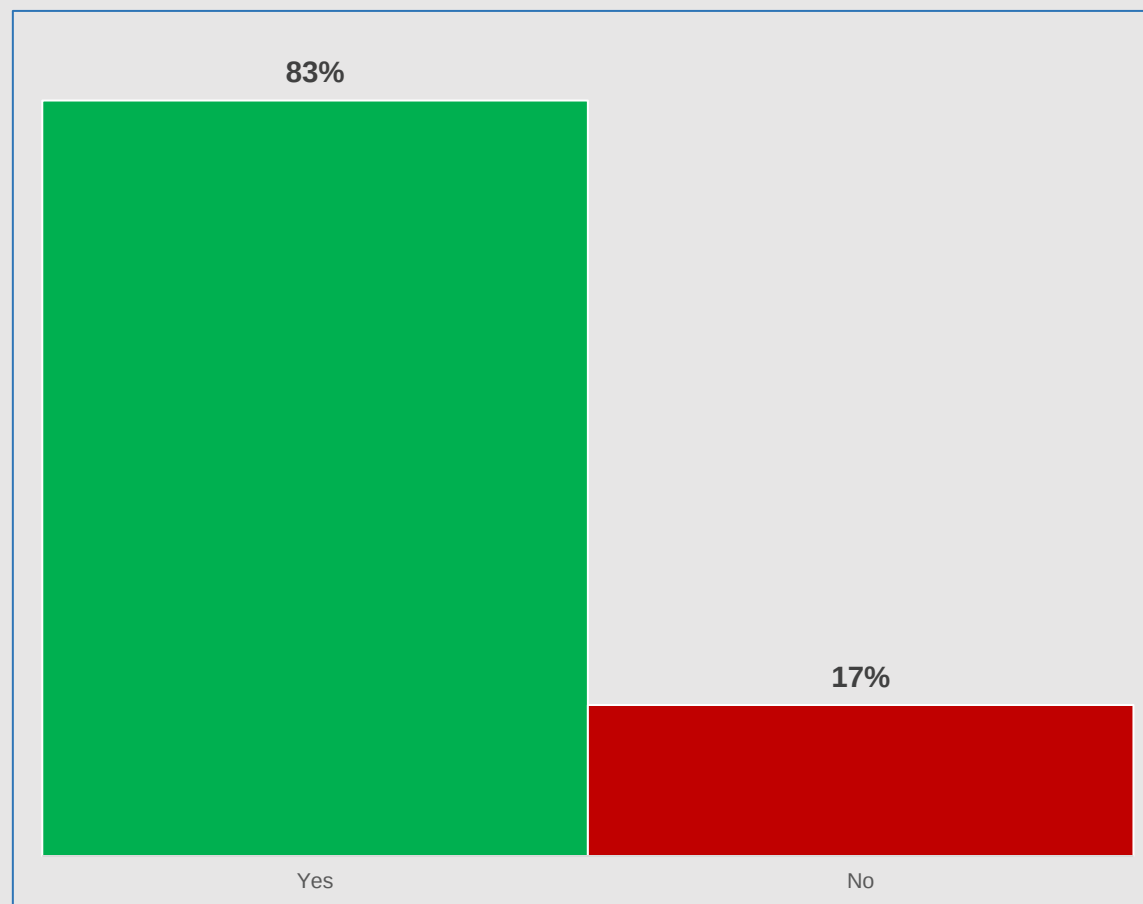


Q. Did the installer explain the complaints procedure?



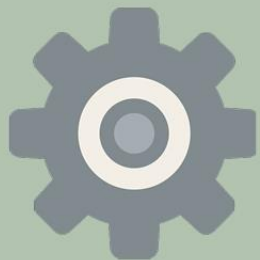
83% of the respondents who had installed Solar Panels claimed that the installer provides after-sales services

Q. Does the installer provide after-sales service?



Some reasons why respondents were dissatisfied with the installation process included the delay with installation even after full payment (6%), the quality not being up to mark (12%) and delays in meter installation (3%)

Q. If you were dissatisfied with the installation process, what were the reasons?*



12%

Dissatisfied because Quality of Work not up to the mark



4%

Dissatisfied because there was frequent employee turnover at the Installer's end (A new face every time a complaint lodged)



10%

Not provided any reason



3%

Dissatisfied because of delays in delivery of inventory material required for installation



6%

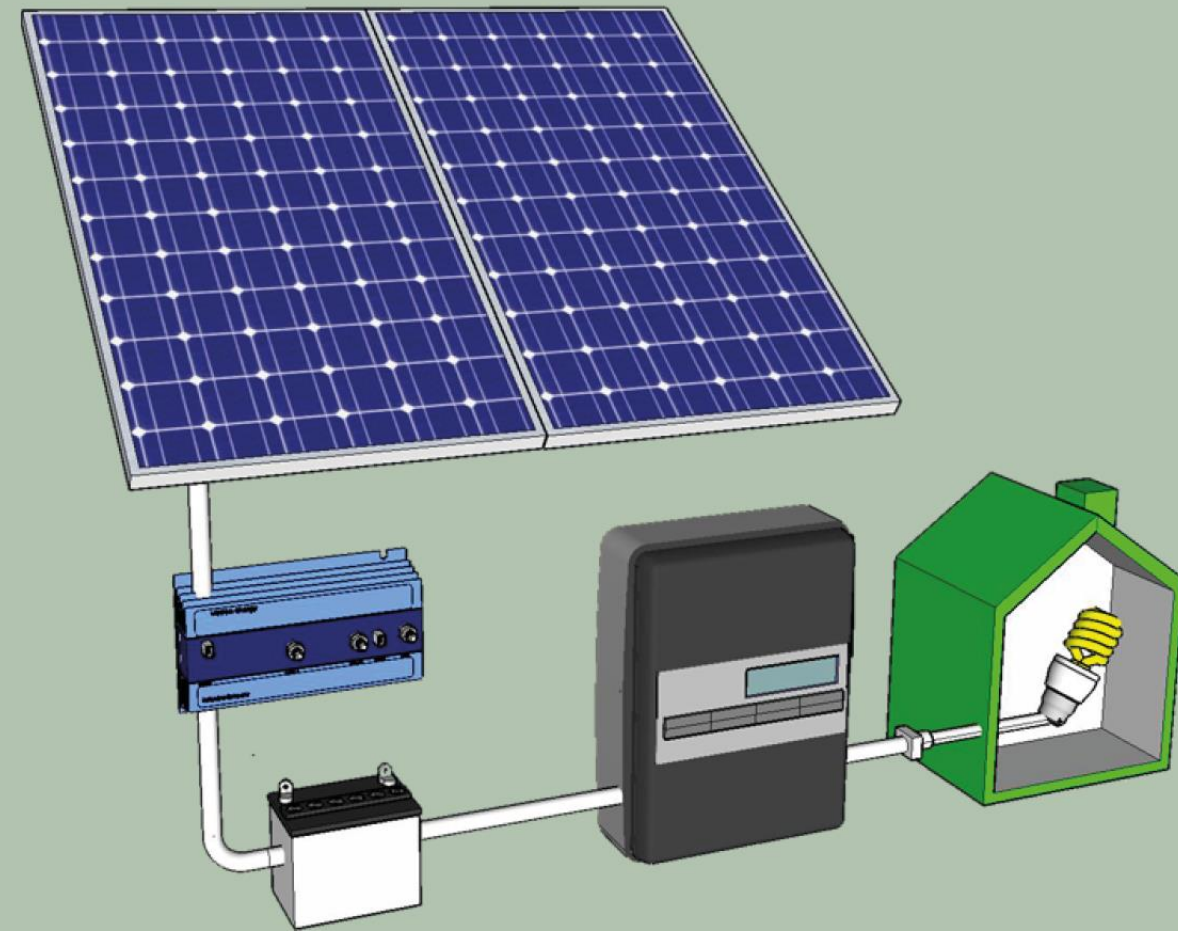
Dissatisfied because of delays in system installation (with full payment given in advance by customer)



3%

Dissatisfied because of delays in surveys and meter installation

SECTION 3: USER UNDERSTANDING OF SOLAR EQUIPMENT INSTALLED

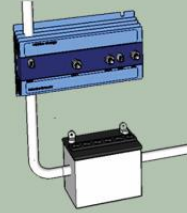


SECTION 3: USER UNDERSTANDING OF SOLAR EQUIPMENT INSTALLED



80%

of the respondents installed Solar Panels in their home between the years 2019 and 2021



60%

Approximately 60% of the solar panel users don't have a battery-powered system



34%

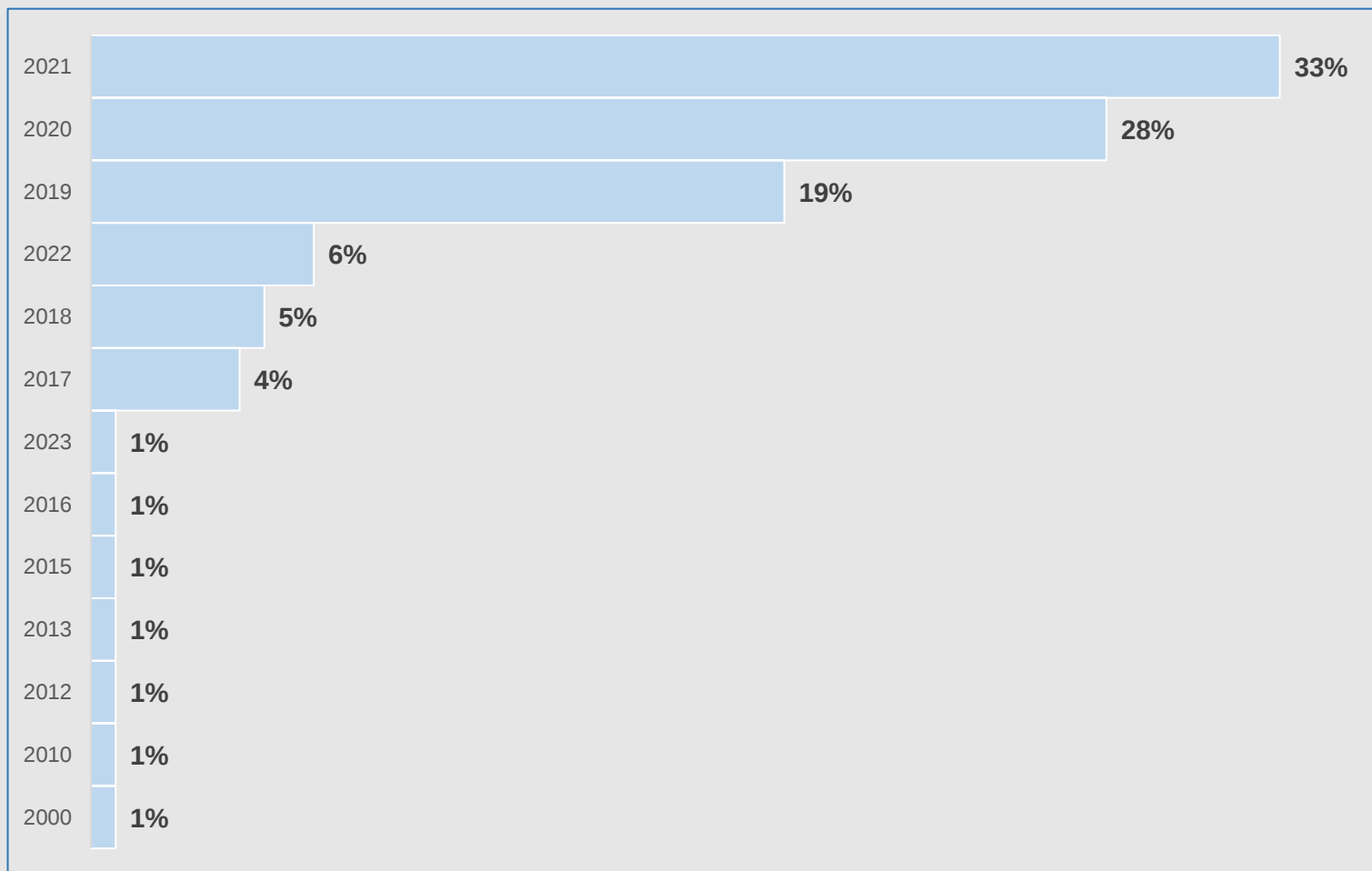
of the respondents said they installed a solar panel system of 10 KVA



On average, it took respondents 13 weeks to get their net-metering connection

80% of the respondents installed Solar Panels in their home between the years 2019 and 2021

*Q. What year did you install Solar Panels in your home?**



On September 1, 2015, the National Electric Power Regulatory Authority (NEPRA) approved a net-metering program.⁴ Post-program, we observe an increase in the percentage of Solar Panels installed.

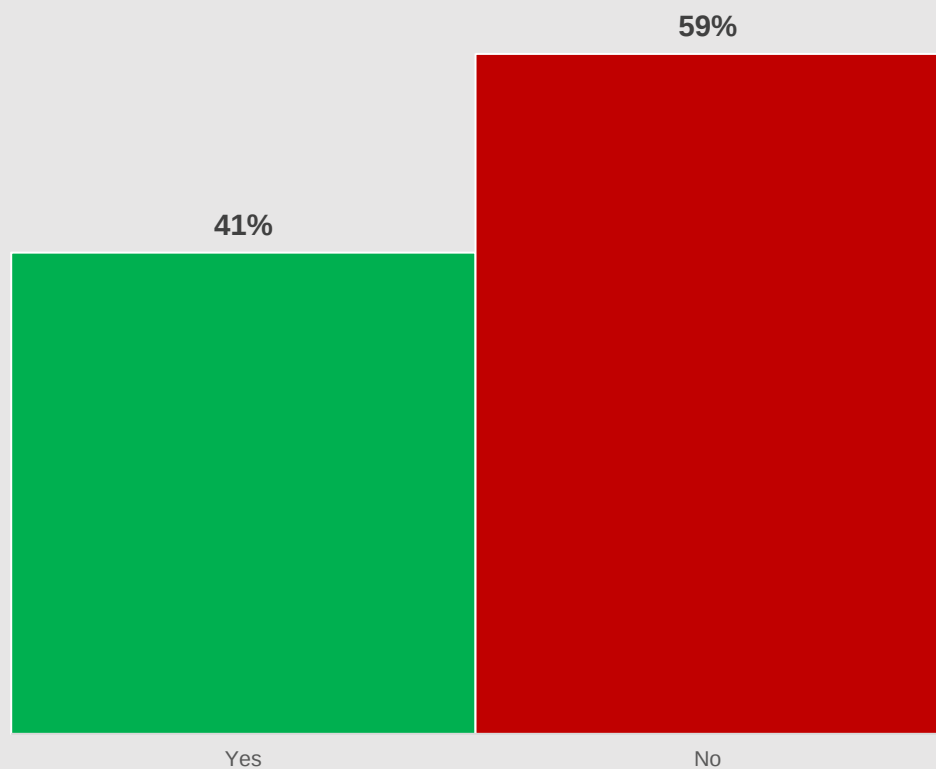
Measuring Solar Panel User Satisfaction in Pakistan

1. *Based on 146 responses. 2.**Percentages don't add up to 100 because data for time periods before 2017 excluded since values were close to 0. 3.***Values for Refused and Don't Know excluded. 4.

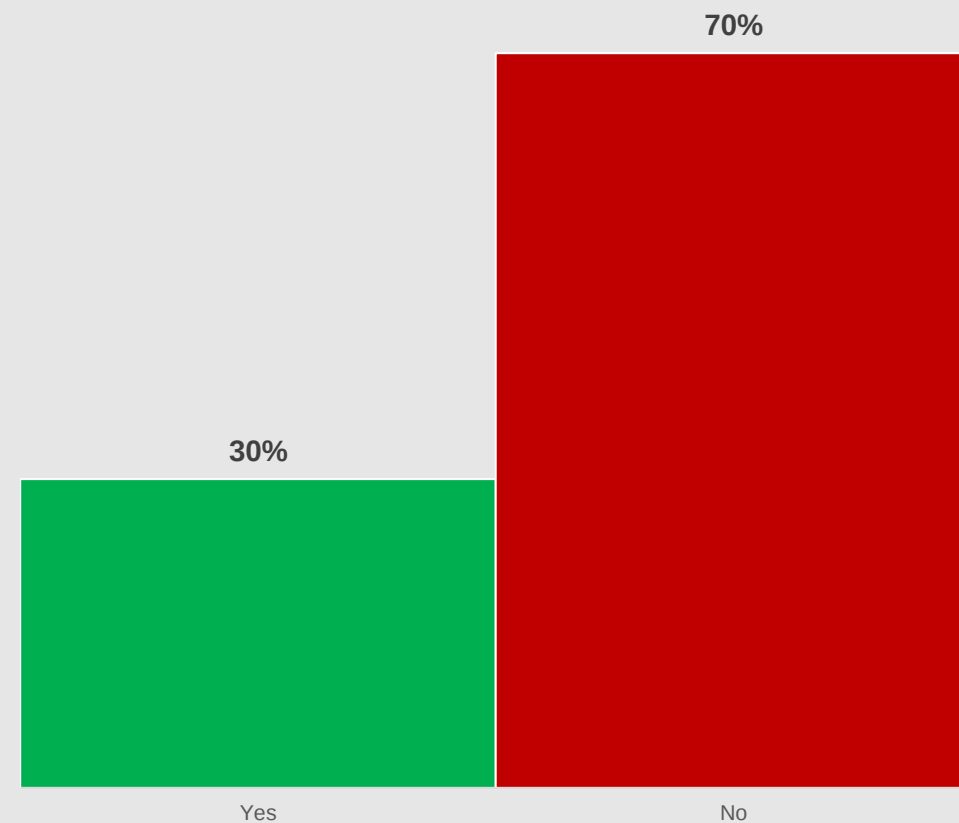
<https://www.pv-magazine.com/2018/01/05/pakistan-updates-net-metering-scheme-unveils-clean-energy-investment-program/>

Approximately 60% of the solar panel users don't have a battery-powered system. 30% of the respondents unfortunately had to pay bribe money to the government department while getting their net metering connection

Q. Is the system you've installed a battery-powered one?



*Q. While getting your net metering connection, did you, unfortunately, have to pay any bribe money to the government department?**



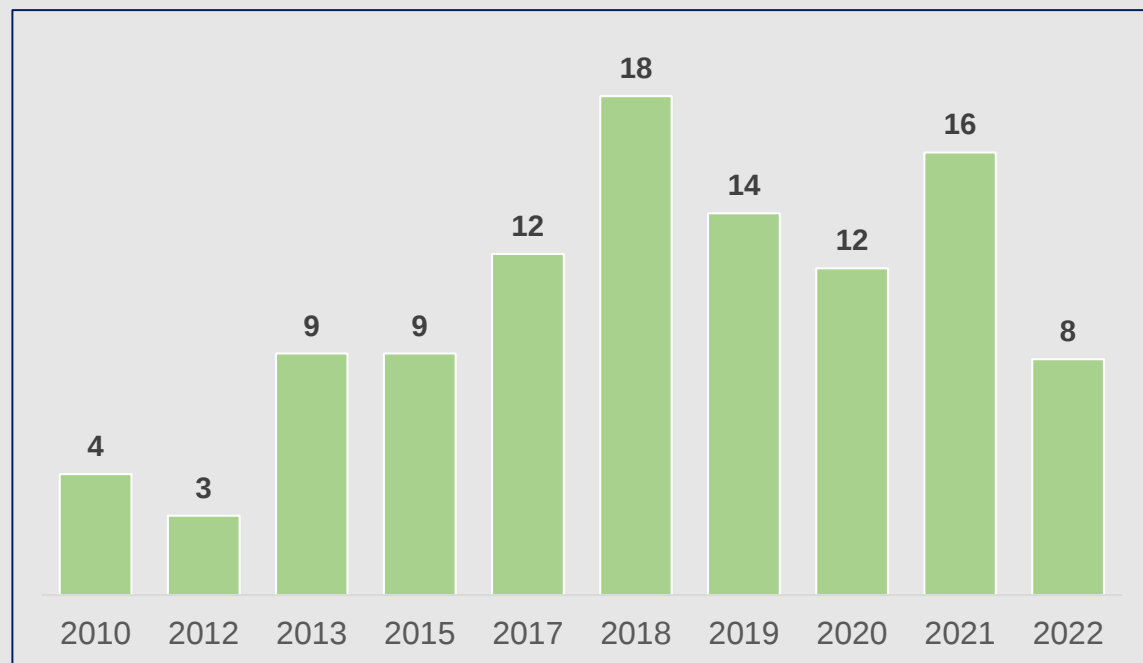
1. *Data based on 142 responses.

On average, it took respondents 14 weeks to get their net-metering connection after sending the application

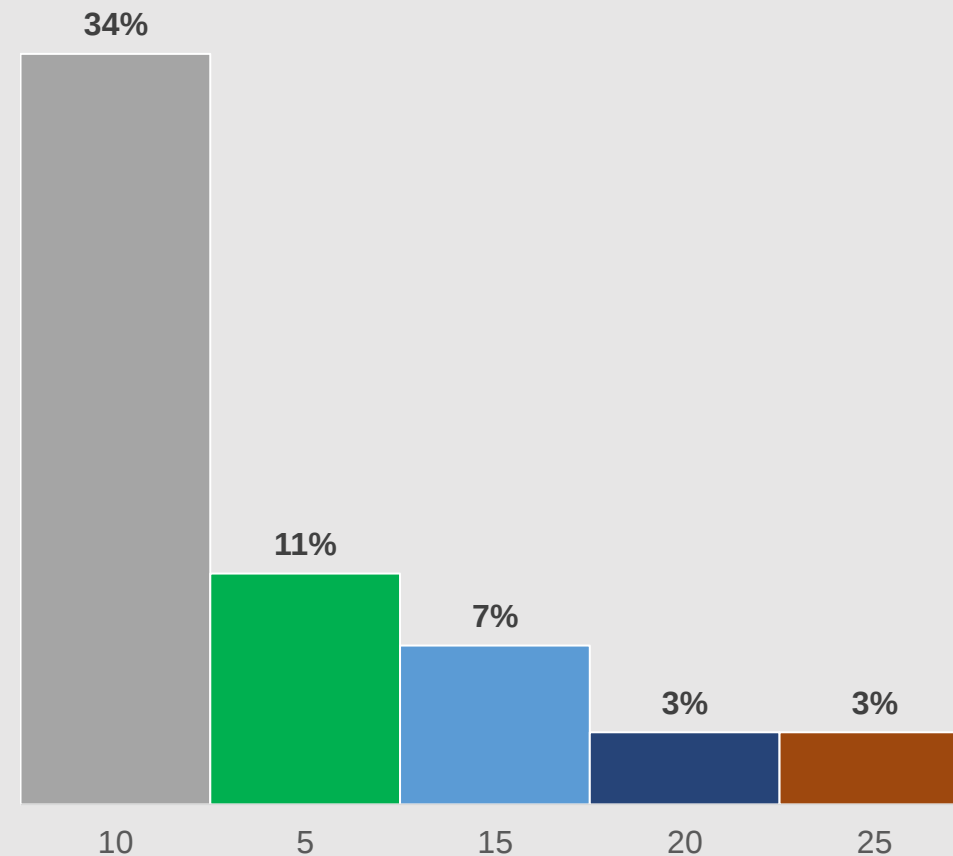
*Q. How much time did it take you to get your net metering connection after you sent the applications?**

Overall Average No. of Weeks = 14 Weeks

Average No. of Weeks Across Different Years*



*Q. How many KVA is the system you've installed?**



Measuring Solar Panel User Satisfaction in Pakistan

1. *Values for 2014, 2016 excluded since =0. 2. **Data included for only 5-25 KVA. Total responses = 89 for this range of KVA. Excluded all other responses as they represented percentages under 5%.

SECTION 4: SYSTEM PERFORMANCE AND MAINTENANCE



SECTION 4: SYSTEM PERFORMANCE AND MAINTENANCE TOPLINE



88%

of the respondents are satisfied as well as very satisfied with the overall performance of the solar panels installed in their homes



9 in 10 respondents are satisfied to a somewhat or great extent with the quality of the system installed in their homes



4 in 5 solar panel users are satisfied with the performance in financial terms



83%

respondents are satisfied with the extent to which Solar has cut their electricity bills



65%

satisfied and very satisfied with the aftercare services provided by the installer

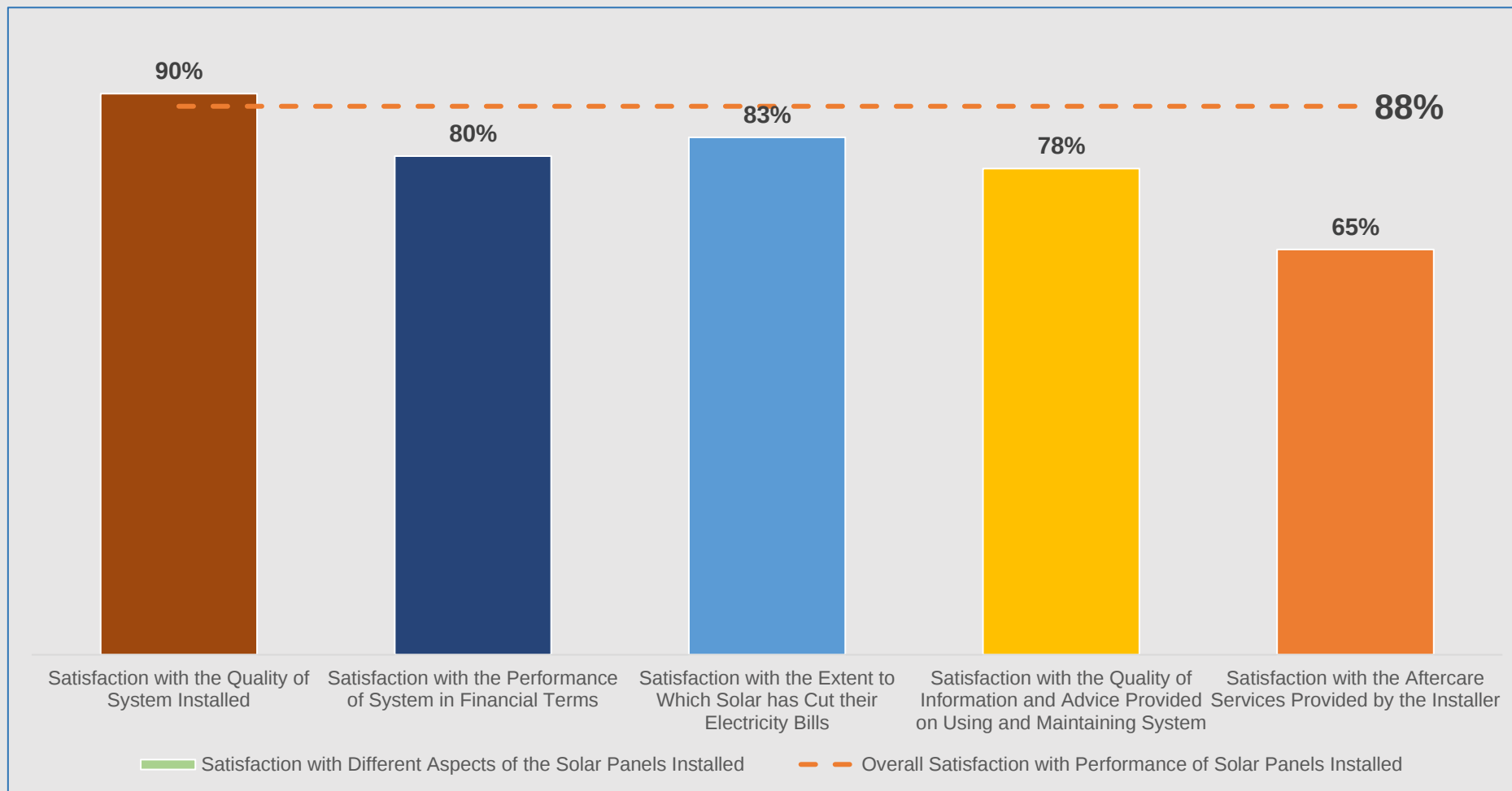


81%

Majority (81%) are not willing to compromise on quality in favor of cost saving solar panels

SECTION 4: SYSTEM PERFORMANCE AND MAINTENANCE TOPLINE SATISFACTION DATA

Overall Satisfaction with the Performance of Solar Panels Installed + Satisfaction with Different Aspects of the System Installed**



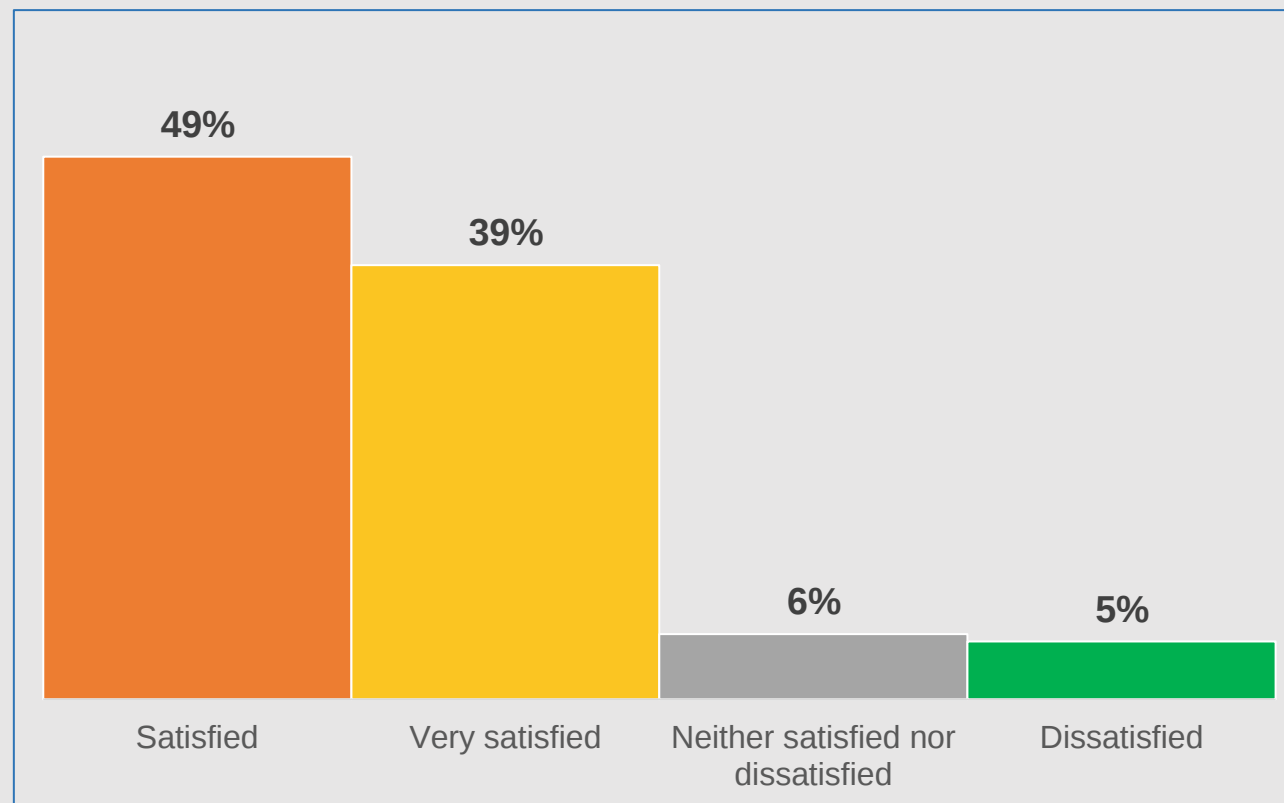
Respondents had the highest satisfaction with the Quality of the System Installed (90%) and the lowest satisfaction with the Aftercare Services Provided by the Installer (65%)

In the following slides, we provide an individual breakdown of each of the aspects

1. *Data reported for Satisfied + Very Satisfied

88% of the respondents are satisfied as well as very satisfied with the overall performance of the solar panels installed in their homes

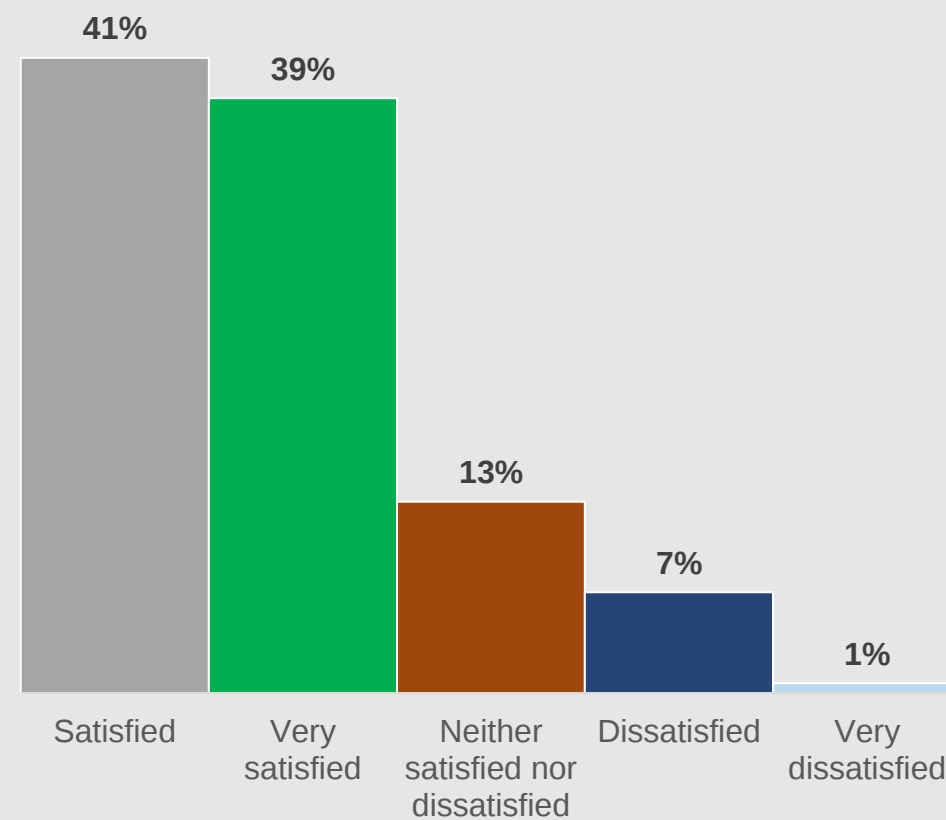
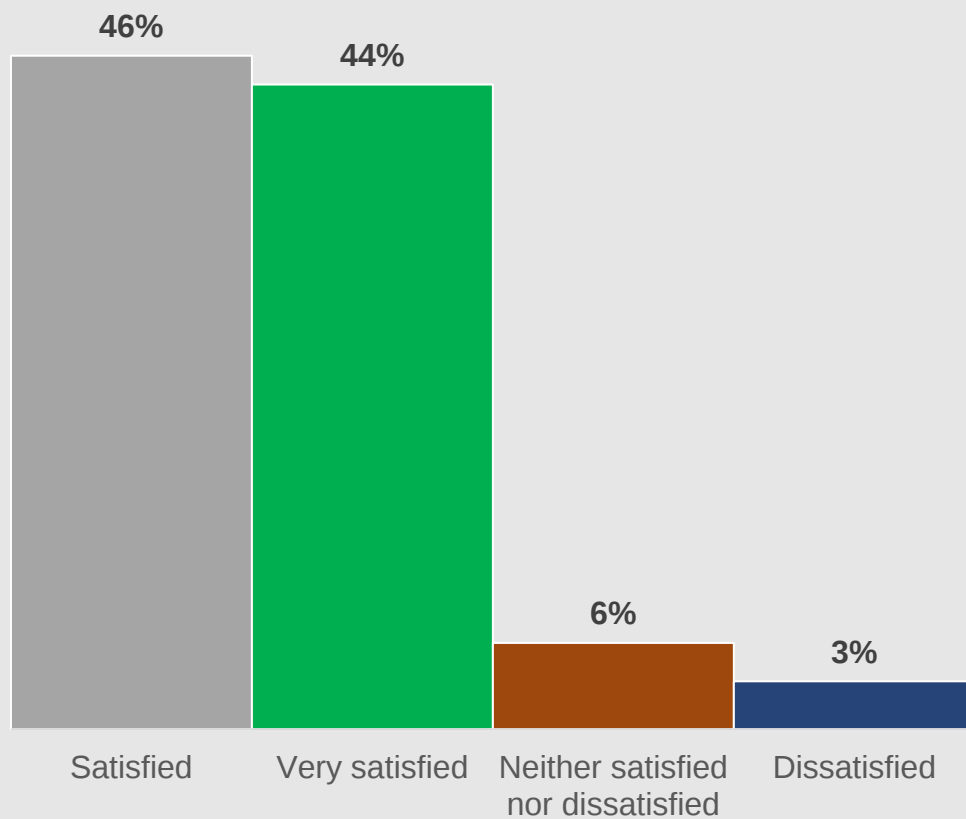
Q. How satisfied/dissatisfied are you with the overall performance of the solar panels installed?



**9 in 10 respondents are satisfied to a somewhat or great extent with the quality of the system installed in their homes.
4 in 5 solar panel users are satisfied with the performance in financial terms**

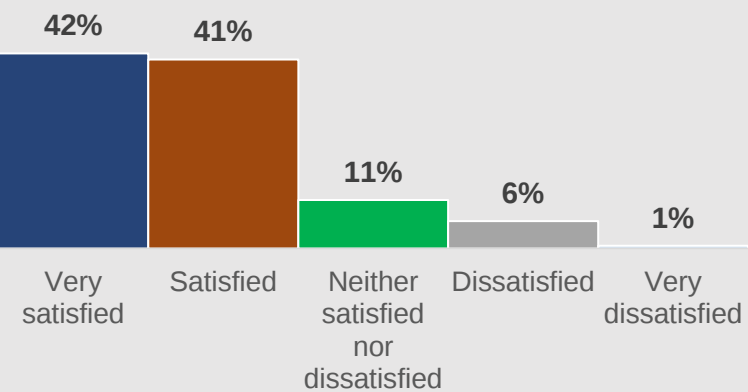
Q. What is your satisfaction level with the following aspects of the Solar Panels installed? – Quality of the System Installed

Q. What is your satisfaction level with the following aspects of the Solar Panels installed? – Performance of System in Financial Terms

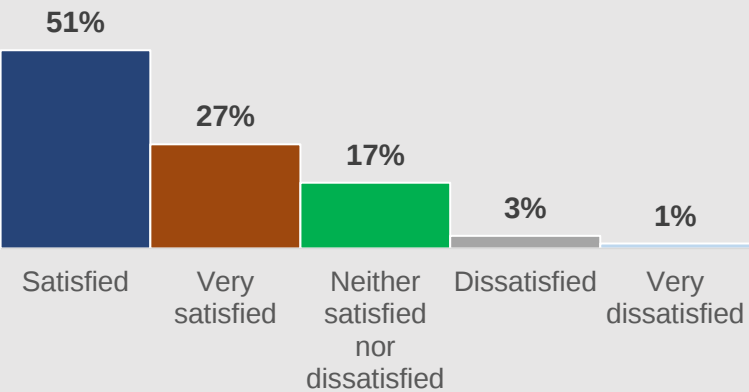


Approximately 83% are satisfied with the extent to which solar has cut their electricity bills. More than half the respondents ³³ are satisfied and very satisfied (78%) with the quality of information and advice received on using and maintaining the system

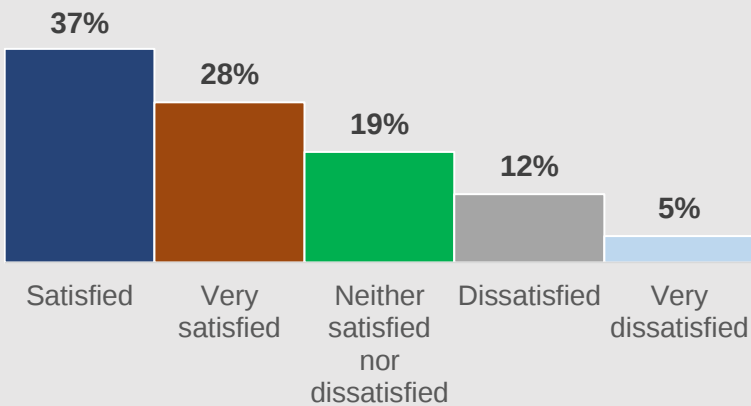
Q. What is your satisfaction level with the following aspects of the Solar Panels installed? – Extent to Which Solar Has Cut Electricity Bills



Q. What is your satisfaction level with the following aspects of the Solar Panels installed? – Quality of Information and Advice on Using and Maintaining System

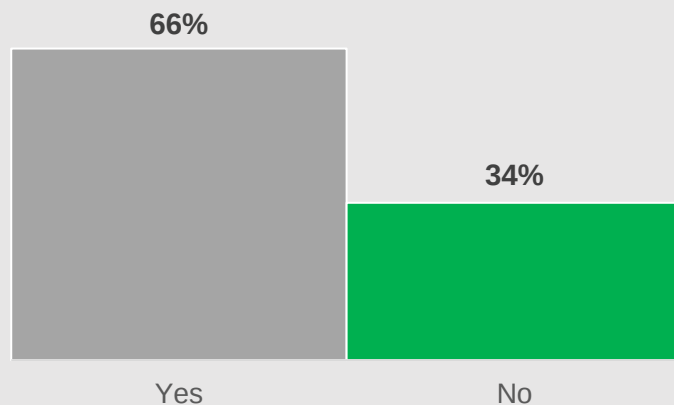


Q. What is your satisfaction level with the following aspects of the Solar Panels installed? – Aftercare Provided by Installer

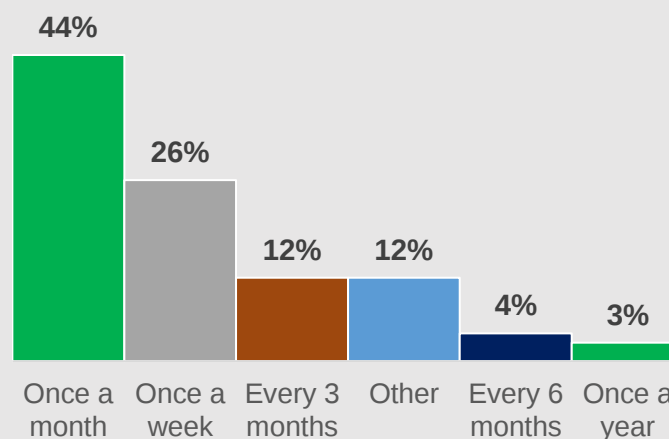


4 in 6 respondents are more conscious of their electricity use after installing solar panels. Almost half the respondents (44%) report washing their solar panels at least once a month.

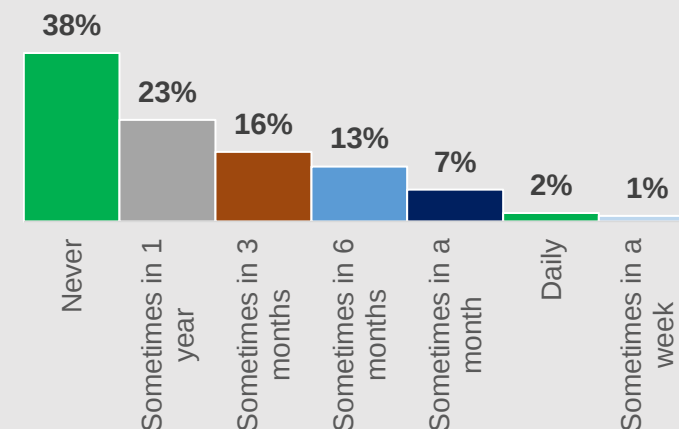
Q. Are you more conscious of your electricity use after installing Solar Panels?



Q. How often do you wash your Solar Panels?

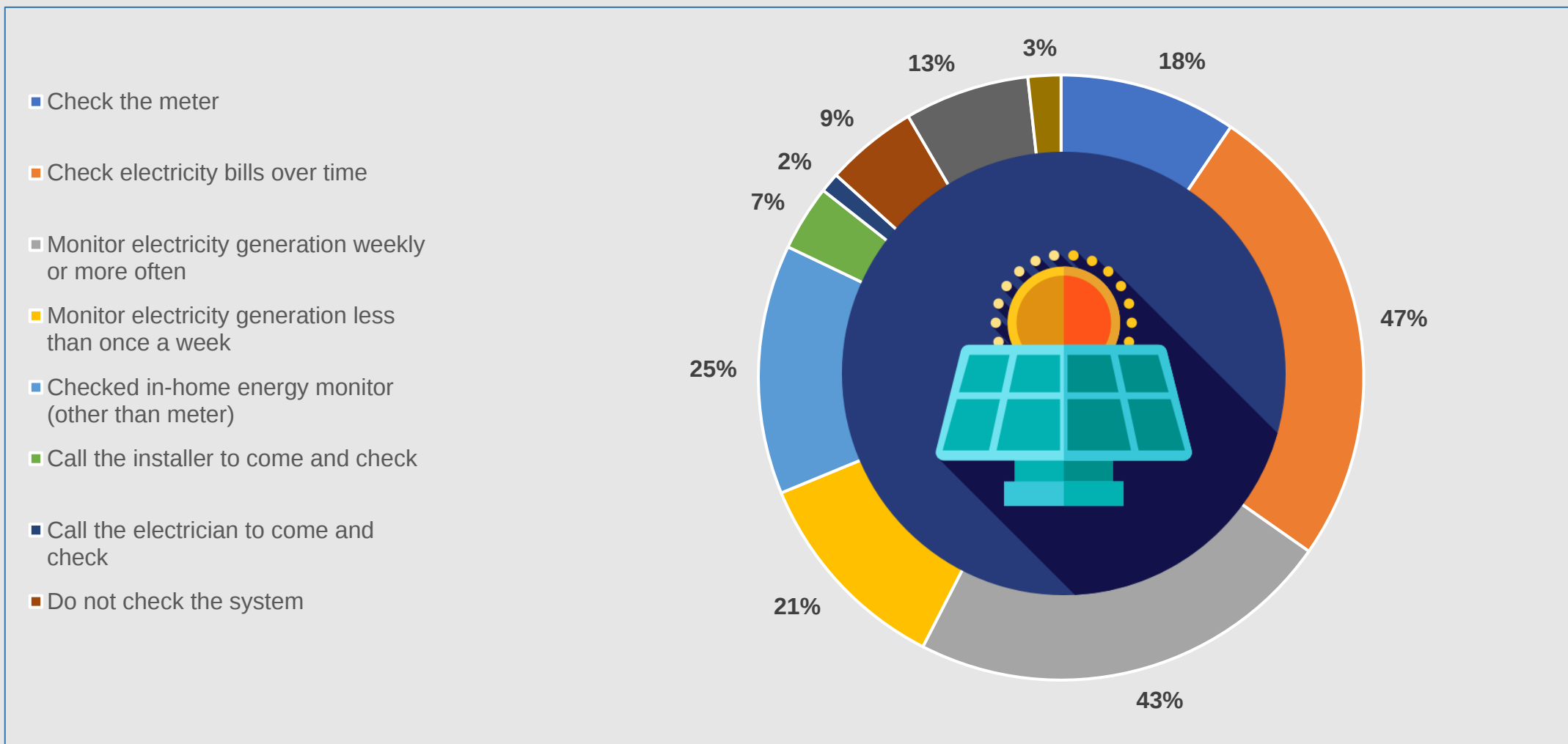


Q. How often does the Solar function develop faults or stop working?



Most solar panel users check their electricity bills over time as well as monitor electricity generation weekly or more often to ensure their solar panels are working properly

*Q. How do you check the solar panel system to ensure it's working properly?**

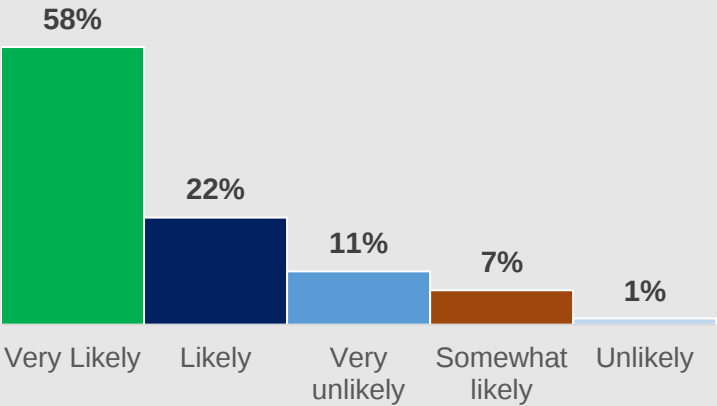


Measuring Solar Panel User Satisfaction in Pakistan

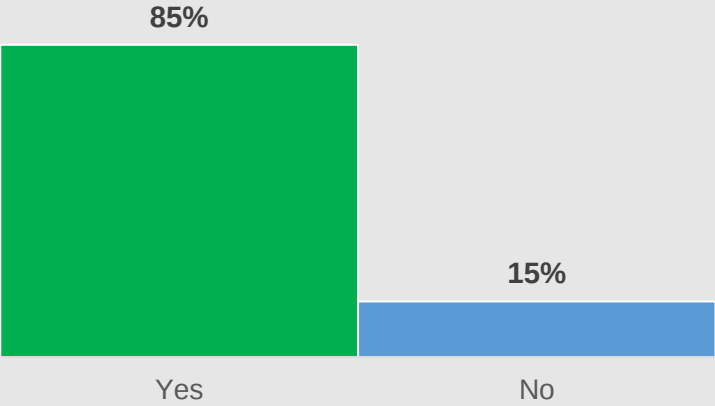
1. *Percentages don't add up to 100 because more than one option could be selected. Category "Other" includes: Through the company's app, Monitor daily online, I have installed my own software to monitor device, Often, the solar company doesn't respond so we contact the electrician who is familiar with solar systems, Online power system.

4 in 5 respondents are likely and very likely to recommend solar panels to someone in their network and 6 in 7 know of a friend or relative who has installed a solar system because of their example. Majority (81%) are not willing to compromise on quality in favor of cost saving solar panels

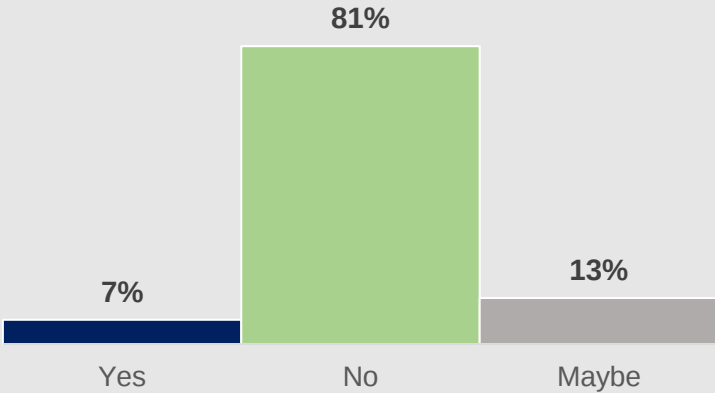
Q. Considering your knowledge about Solar Panels and the benefits you’ve noted, if any, how likely/unlikely are you to recommend solar panels to someone you know?



Q. Do you know if any of your friends or relatives installed a Solar System due to your example?



Q. Would you compromise on quality in favor of cost saving Solar Panels?



SECTION 5: INSIGHTS FROM RESPONDENTS



SECTION 5: INSIGHTS FROM RESPONDENTS

SOME COMMENTS FROM OUR RESPONDENTS...

Advocating for Solar Panels across the country:

“One recommendation I would like to give is that the government should encourage people to install solar by giving them concessional loans from the bank as is done in the UK. This is the only way to reduce government burden on thermal production of electricity, foreign exchange, line losses etc. We need to adopt new ways of life, modern technology, and change our habits. The government should focus on educating the masses”

“I have just toured vast rural areas where load-shedding is much higher than in cities. They only need 2-3 KVA systems for a couple of lights and fans but big solar companies are reluctant to develop smaller systems allegedly due to small profit margins and the discomfort of working in hard conditions of rural areas”

Other comments:

“We would like to hear about the results from this survey”

“It would also be great if you guys could gather data on the actual installed capacity of solar in the country – the NEPRA data will only give you insights into net-metered system. There is a much bigger market which using solar for captive generation which won’t show up on this database”

“As a scientist (environmentalist), I am against solar panels as they release greenhouse gases in their making and use heavy metals which have no rules when they are disposed off after 10-15 years. US and China are in a process of finalizing the rules. I can deliver a lecture in this regard”

Aftersales services and post-installation issues:

“Don’t have a problem with installation but with after sales, They are prompt in responding by sending a technician, but the technician is unable to solve my problem. They constantly give me same the excuse that the system is overloaded. That’s not true as its its the same that was installed”

“We did not have any serious issues with maintenance because the firm that installed the systems had robust credentials. However, all our problems are related to LESCO – Starting with the license, to readings, to meter malfunction..everything was made into a serious issue..I am not so sure I would go through this again..”

Quality of the system installed:

“Its been 2 years only and the structure has started getting rust..I was told it is designed with the life of 25 years”

“The Solar Panels were not properly fixed, so on first storm in summers, 3 of them flew over and were completely damaged”

“As a customer of SkyElectric since the last two years, the experience has been good. Electricity bill is always in minus despite having system without backup and company’s after-sales service is also very good”

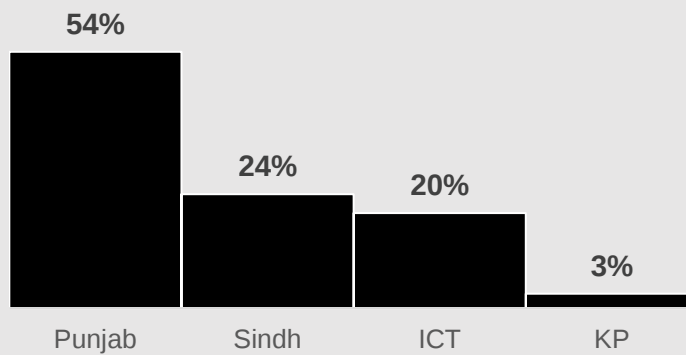
SECTION 6: DEMOGRAPHICS



SECTION 6: DEMOGRAPHICS



152 respondents*



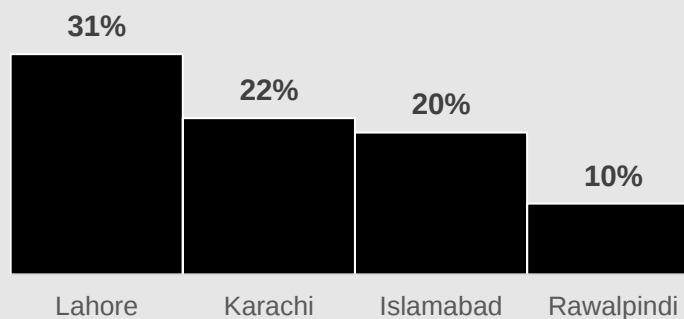
Provincial representation



Rural: Urban:



Male: 92% Female: 8%



Top 4 Districts Represented



Average No. of Years Lived in Present House = 15 Years

1. 156 in total but 4 dropped out after answering no to Q6.

DEMOGRAPHICS CONTINUED..

LIST OF SOLAR COMPANIES IN SURVEY



SkyElectric



Catkin



ETSAQ

LIST OF PROVINCES COVERED IN SURVEY

Punjab
Sindh
KP
ICT

LIST OF DISTRICTS COVERED IN SURVEY

Islamabad
Rawalpindi
Lahore
Multan
Peshawar
Faisalabad
Karachi
Layyah
Okara
Khanewal
Jamshoro
Hyderabad
Bahawalpur
Malir
Multan
Rahim Yar Khan
Abbottabad

LIMITATIONS OF THE STUDY

LIMITATIONS:

- The survey is restricted to net-metering users only so our sample size is limited
- The survey was self-filled by respondents so responses represent limited technical knowledge
- There is minimal representation from KP and no representation from Balochistan (Not particularly clear whether net metering is rare in these provinces or if there's a selection bias in the sample)

LINK TO SURVEY FORM:

<https://forms.office.com/pages/responsepage.aspx?id=7ZWe6srly0ialcqFOmJzCJBpaaa0JoLLicBBZsjKdO9UMkYxTzdBSUw1SIJNVkJJVkdWQIFTRzk3VS4u>

DISCALIMER:

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