Understanding Solar PV investment decisions in the residential sector

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Karin Kritzinger
Louise Scholtz

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Outline Presentation

• Who are the respondents?
• Environmental Concerns
• Social Influences
• Financial Factors
• Conclusion
Survey

- Sampling Period: May – August 2018
- Sent out online
- Total usable respondents: 2,678

![Graph showing outcomes of the Household Solar Energy Survey]

- Has PV
- Might install PV in the next 5 years
- Not planning to install PV at all

<table>
<thead>
<tr>
<th>Has PV</th>
<th>Might install PV in the next 5 years</th>
<th>Not planning to install PV at all</th>
</tr>
</thead>
<tbody>
<tr>
<td>242</td>
<td>2141</td>
<td>295</td>
</tr>
</tbody>
</table>

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
Survey Respondents

Do you pay by Credit or Pre Paid?

<table>
<thead>
<tr>
<th>Category</th>
<th>Monthly or yearly bill</th>
<th>Pre Paid</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Has PV installed</td>
<td>50%</td>
<td>50%</td>
<td></td>
</tr>
<tr>
<td>Might install PV in the next 5 years</td>
<td>50%</td>
<td>30%</td>
<td>20%</td>
</tr>
<tr>
<td>Not planning to install PV at all</td>
<td>0%</td>
<td>100%</td>
<td></td>
</tr>
</tbody>
</table>
Survey Respondents

Do you own or rent a house?

- Has PV installed
  - Own: 100%
  - Rent: 0%
  - Other: 0%

- Might install PV in the next 5 years
  - Own: 90%
  - Rent: 10%
  - Other: 0%

- Not planning to install PV at all
  - Own: 80%
  - Rent: 20%
  - Other: 0%
Do you have a solar geyser?

- **Has PV**
  - Has solar geyser installed: 30%
  - No solar geyser installed: 70%

- **Might install PV**
  - Has solar geyser installed: 40%
  - No solar geyser installed: 60%

- **Not planning to install PV at all**
  - Has solar geyser installed: 50%
  - No solar geyser installed: 50%
### Survey Respondents

How much do you pay for electricity per month?

<table>
<thead>
<tr>
<th></th>
<th>PV owners</th>
<th>Potential PV owners</th>
<th>HH not planning to install PV</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pays less than R200 per month</strong></td>
<td>12%</td>
<td>4%</td>
<td>5%</td>
</tr>
<tr>
<td></td>
<td>of PV owners</td>
<td>of potential PV owners</td>
<td>of HH not planning to install PV</td>
</tr>
<tr>
<td><strong>Pays more than R1000 per month</strong></td>
<td>36%</td>
<td>40%</td>
<td>27%</td>
</tr>
<tr>
<td></td>
<td>of PV owners</td>
<td>of potential PV owners</td>
<td>of HH not planning to install PV</td>
</tr>
</tbody>
</table>
Is your electricity provider aware of your PV installation?

- **Yes**: 75%
- **No / I don't know**: 25%
Environmental Motivations

How important was reducing your environmental impact in decision making?

How informed are you about the issue of climate change?

Do you agree electricity from coal contributes to climate change?

Do you recycle in your household?
Environmental Motivations

How important was reducing your environmental impact in making your decision to invest? 
All respondents:

- Very important: 88% Has PV installed, 86% Might install PV in the next 5 years, 80% Not planning to install PV at all
- Somewhat important: 14% Has PV installed, 10% Might install PV in the next 5 years, 10% Not planning to install PV at all
- Not important: 6% Has PV installed, 2% Might install PV in the next 5 years, 4% Not planning to install PV at all
Do you agree that the generation of electricity from coal contributes to Climate Change?

All respondents:

<table>
<thead>
<tr>
<th>Category</th>
<th>Has PV installed</th>
<th>Might install PV in the next 5 years</th>
<th>Not planning to install PV at all</th>
</tr>
</thead>
<tbody>
<tr>
<td>I don’t know/ Not sure</td>
<td>6%</td>
<td>4%</td>
<td>5%</td>
</tr>
<tr>
<td>No</td>
<td>1%</td>
<td>2%</td>
<td>3%</td>
</tr>
<tr>
<td>Yes</td>
<td>93%</td>
<td>94%</td>
<td>91%</td>
</tr>
</tbody>
</table>
Environmental Motivations

How informed would you say you are about the issue of climate change?

**All respondents:**

<table>
<thead>
<tr>
<th>Not informed</th>
<th>Somewhat informed</th>
<th>Very well informed</th>
</tr>
</thead>
<tbody>
<tr>
<td>0%</td>
<td>1%</td>
<td>0%</td>
</tr>
<tr>
<td>2%</td>
<td>35%</td>
<td>65%</td>
</tr>
<tr>
<td>38%</td>
<td>43%</td>
<td>62%</td>
</tr>
<tr>
<td>55%</td>
<td>60%</td>
<td>55%</td>
</tr>
</tbody>
</table>

- **Red**: Has PV installed
- **Blue**: Might install PV in the next 5 years
- **Black**: Not planning to install PV at all
Environmental Motivations

Do you recycle in your household?
All respondents:

<table>
<thead>
<tr>
<th>Recycling Practice</th>
<th>Has PV installed</th>
<th>Might install PV in the next 5 years</th>
<th>Not planning to install PV at all</th>
</tr>
</thead>
<tbody>
<tr>
<td>We don't recycle</td>
<td>3%</td>
<td>6%</td>
<td>9%</td>
</tr>
<tr>
<td>Now and then, but not all the time</td>
<td>13%</td>
<td>18%</td>
<td>14%</td>
</tr>
<tr>
<td>As much as we can</td>
<td>83%</td>
<td>76%</td>
<td>78%</td>
</tr>
</tbody>
</table>
Main Findings

Most respondents care about the environment.

Environmental concerns not a significant factor in high adoption rates.
Social Influences

Asked to all respondents:

Do you have family, friend or colleagues who have PV installed?

How many people in the neighbourhood have solar PV installed?

Asked to non-PV owners:

Have you ever seen solar PV on any property?

Have you ever had a conversation about PV with someone who has PV installed?

Have you ever seen or heard an advertisement for solar PV?

Have you ever read an article about the installation of PV on properties?
Do you have **family, friend or colleagues** who have PV installed?

All respondents:

- **Has PV installed**:
  - Yes: 71%
  - No / Not Sure: 29%

- **Might install PV in the next 5 years**:
  - Yes: 51%
  - No / Not Sure: 49%

- **Not planning to install PV at all**:
  - Yes: 37%
  - No / Not Sure: 63%
### Social Influences

Do people in your **neighbourhood** have solar PV installed?

<table>
<thead>
<tr>
<th>Has PV installed</th>
<th>74%</th>
<th>26%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Might install PV in the next 5 years</td>
<td>58%</td>
<td>42%</td>
</tr>
<tr>
<td>Not planning to install PV at all</td>
<td>39%</td>
<td>61%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>0%</th>
<th>10%</th>
<th>20%</th>
<th>30%</th>
<th>40%</th>
<th>50%</th>
<th>60%</th>
<th>70%</th>
<th>80%</th>
<th>90%</th>
<th>100%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>None that I know of</td>
<td>Yes</td>
<td>None that I know of</td>
<td>Yes</td>
<td>None that I know of</td>
<td>Yes</td>
<td>None that I know of</td>
<td>Yes</td>
<td>None that I know of</td>
<td>Yes</td>
</tr>
</tbody>
</table>

AMEU 26th Technical Convention, October 2018

Outcomes from the solar energy survey
Social Influences

Have you ever seen solar PV installed on properties?

- Might install PV in the next 5 years
- Not planning to install PV at all

Have you ever had a conversation with someone who has solar PV installed?

- Might install PV in the next 5 years
- Not planning to install PV at all

Have you ever heard or seen an advertisement?

- Might install PV in the next 5 years
- Not planning to install PV at all

Have you ever read an article about installation of PV?

- Might install PV in the next 5 years
- Not planning to install PV at all
Outcomes from the solar energy survey

Innovation Adoption Lifecycle

- Innovators: 2.5%
- Early adopters: 13.5%
- Early majority: 34%
- Late majority: 34%
- Laggards: 16%
How important was **A LACK OF TRUST IN THE GOVERNMENT AND / OR ESKOM?**

**PV owners and potential PV owners:**

- **Has PV installed:**
  - Not important: 11%
  - Somewhat important: 18%
  - Very important: 71%

- **Might install PV in the next 5 years:**
  - Not important: 12%
  - Somewhat important: 20%
  - Very important: 68%
Social Influences

Main Findings

- PV owners know friends, family members or colleagues who has PV
- PV owners have PV installations in their neighbourhood: info for future city planning
- Advertisements have an impact: implications for municipalities when government stimulates solar PV
- Lack of trust in government: increases looking for alternatives
How important is **reducing your future electricity bill** in making your decision to invest in PV or not to invest in PV?

How important is the **possibility rising electricity prices** in making your decision to invest in PV or not to invest in PV?

How important is the **high upfront installation costs** in making your decision to invest in PV or not to invest in PV?
How important was reducing your future electricity bill?

**All respondents:**

<table>
<thead>
<tr>
<th>Importance</th>
<th>Has PV installed</th>
<th>Might install PV in the next 5 years</th>
<th>Not planning to install PV at all</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very important</td>
<td>78%</td>
<td>82%</td>
<td>71%</td>
</tr>
<tr>
<td>Somewhat important</td>
<td>13%</td>
<td>15%</td>
<td>21%</td>
</tr>
<tr>
<td>Not important at all</td>
<td>3%</td>
<td>9%</td>
<td>10%</td>
</tr>
</tbody>
</table>
How important is the possibility of rising electricity prices in making your decision?

**All respondents:**

<table>
<thead>
<tr>
<th>Importance Level</th>
<th>Has PV installed</th>
<th>Might install PV in the next 5 years</th>
<th>Not planning to install PV at all</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not important at all</td>
<td>8%</td>
<td>2%</td>
<td>5%</td>
</tr>
<tr>
<td>Somewhat important</td>
<td>14%</td>
<td>15%</td>
<td>11%</td>
</tr>
<tr>
<td>Very important</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>77%</td>
<td>82%</td>
<td>85%</td>
</tr>
</tbody>
</table>

Has PV installed

Might install PV in the next 5 years

Not planning to install PV at all
How important was the **high upfront costs** in making the decision to invest in rooftop PV?

### All respondents:

<table>
<thead>
<tr>
<th>Importance</th>
<th>Has PV installed</th>
<th>Might install PV in the next 5 years</th>
<th>Not planning to install PV at all</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not important</td>
<td></td>
<td></td>
<td>3%</td>
</tr>
<tr>
<td></td>
<td>3%</td>
<td></td>
<td>13%</td>
</tr>
<tr>
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<td>14%</td>
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<td>55%</td>
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<td></td>
<td></td>
<td></td>
<td>32%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>83%</td>
</tr>
</tbody>
</table>

0% 10% 20% 30% 40% 50% 60% 70% 80% 90%

- Red: Has PV installed
- Blue: Might install PV in the next 5 years
- Black: Not planning to install PV at all
Main Financial Findings

- **Upfront installation costs** are considered as a more significant barrier by the respondents who don’t already have PV.

- **No significant difference for** reduction of future electricity bills or rising electricity prices.

- Future gain is not as important as the initial investment

- **Implications municipalities:**
  - If prices of PV come down, PV investments will go up.
  - If leasing structures are in place, PV investments might go up.
Conclusion

Social and financial factors most important in decision making

Social environment has a significant influence: important for city planning

If costs of PV come down and to a lesser extent in combination with rising electricity prices, PV uptake will increase.

Only 25% of PV owners registered
Thank you

www.wwf.org.za
www.crses.sun.ac.za

For questions: nikkiekorsten@sun.ac.za