Irish national survey of households near new commercial **wind** and **solar farms**

SURVEY METHOD AND SELECTED RESULTS

May 2023

Overview

1. Introduction

2. Sampling strategy

3. Socio-demographics

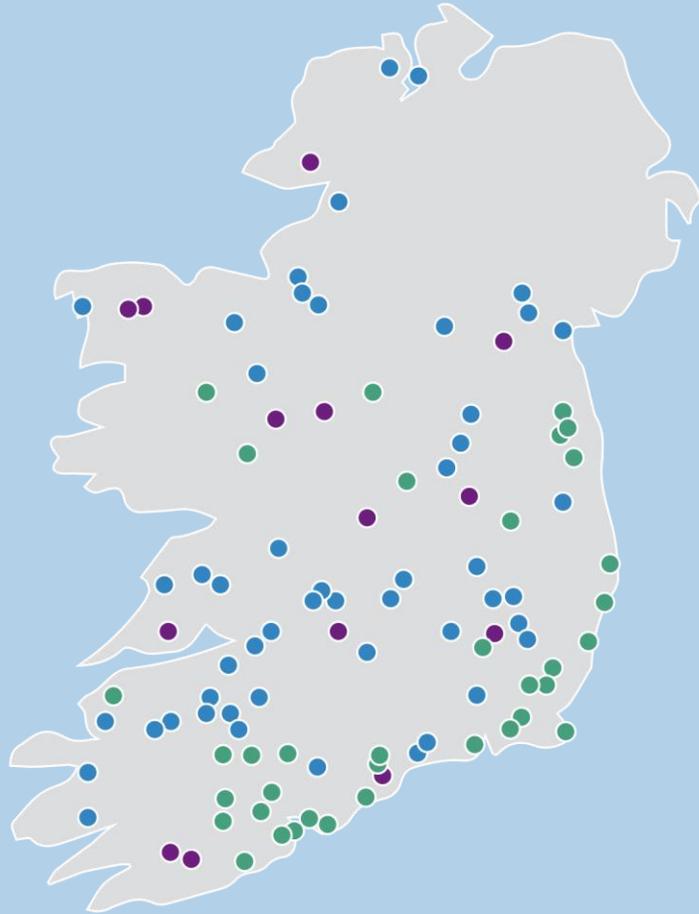4. Results

5. Conclusions and next steps

1. Introduction

SEAI commissioned a national survey of the attitudes of people who live near to 50 new commercial **solar** or **wind farm** projects in Ireland.

This will form part of a long-term study to understand the effects of government policies under the Renewable Electricity Support Scheme (RESS) on the public's support for Ireland's energy transition.

In 2022, surveyors conducted in-person interviews on the doorstep across all of rural Ireland. They surveyed 1,764 households. This included 1,116 households within 5km of a new commercial wind or solar project sites, of which 219 live within 1km of a project site.

- New wind project site surveyed
- New solar project site surveyed
- Surveyed households far from a new solar or wind project

Distance	Households surveyed
>10 km	648
1-5 km	897
<1 km	219
Total	**1,764**
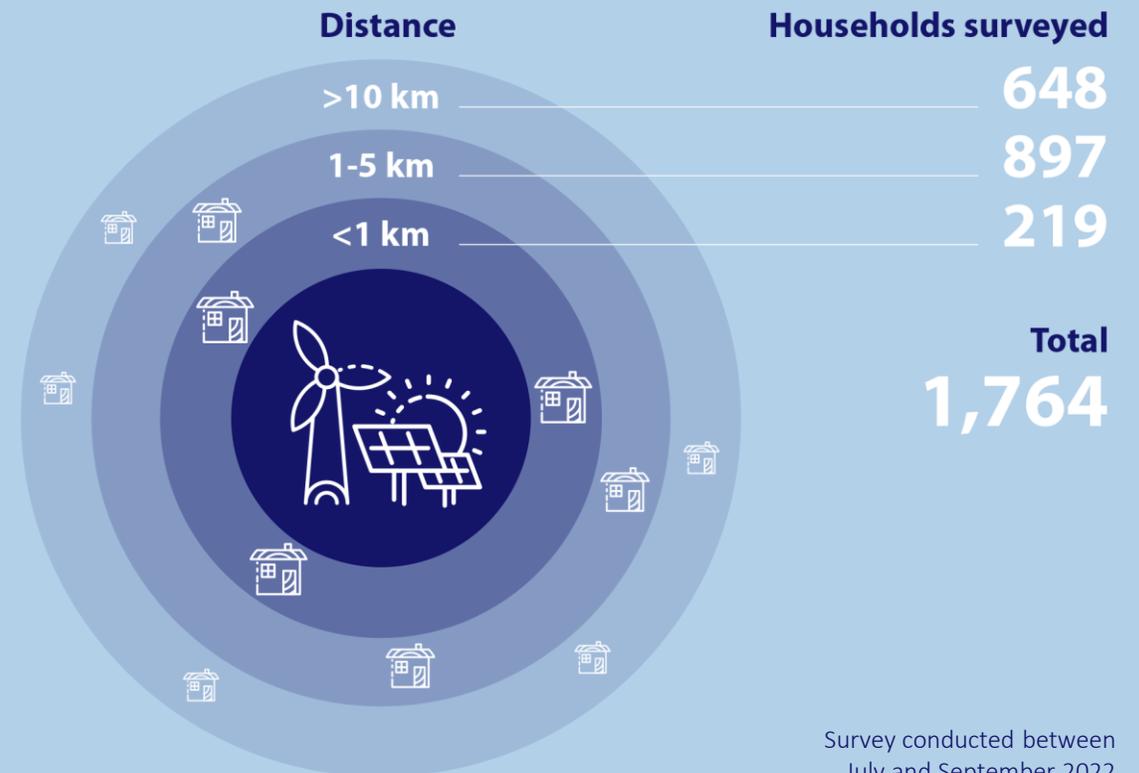
Survey conducted between July and September 2022

2. Sampling strategy

2. Sampling strategy

- The sample started with 50 of the 68 projects that received offers of support under the first auction of the Renewable Electricity Support Scheme (RESS1)
  - All wind sites were initially included
  - A starting point for treatment as 0-5km and control as >10km
  - Additional details broke the sample down into 0-1, 1-2, and 2-5km areas
    - The 0-1 vs 1-2km areas around *wind farm projects* were of particular interest given the RESS1 policy for Near Neighbour Payments (NNP) but the sampling was consistent across all wind and solar sites
    - <5km areas around wind and solar farm projects are of interest given the RESS1 policy for Community Benefit Funds (CBF)
  - Socio-demographics by Electoral District (ED) were matched using CSO-Census Small Area / ED data

- Controls on actual sampling/interviewing were used for broad demographic categories with national representativeness – e.g. sex, age, economic status

- It should be noted that the population socio-demographics of the areas near RESS1 cannot be known without exact household level Census data (which is not available)

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2. Sampling strategy

- The graphic illustrates sampling for treatment areas (50 RESS1 sites) in 3 areas around them
  - <1km from the site (NNP for wind)
  - 1-2km for those just outside of the NNP area
  - 2-5km approximating the CBF area; sampling often occurred in nearby towns within this range

- The sample size targets per site were
  - 5 in the <1km region
 - 5 in the 1-2km region
  - 10 in the 2-5km region
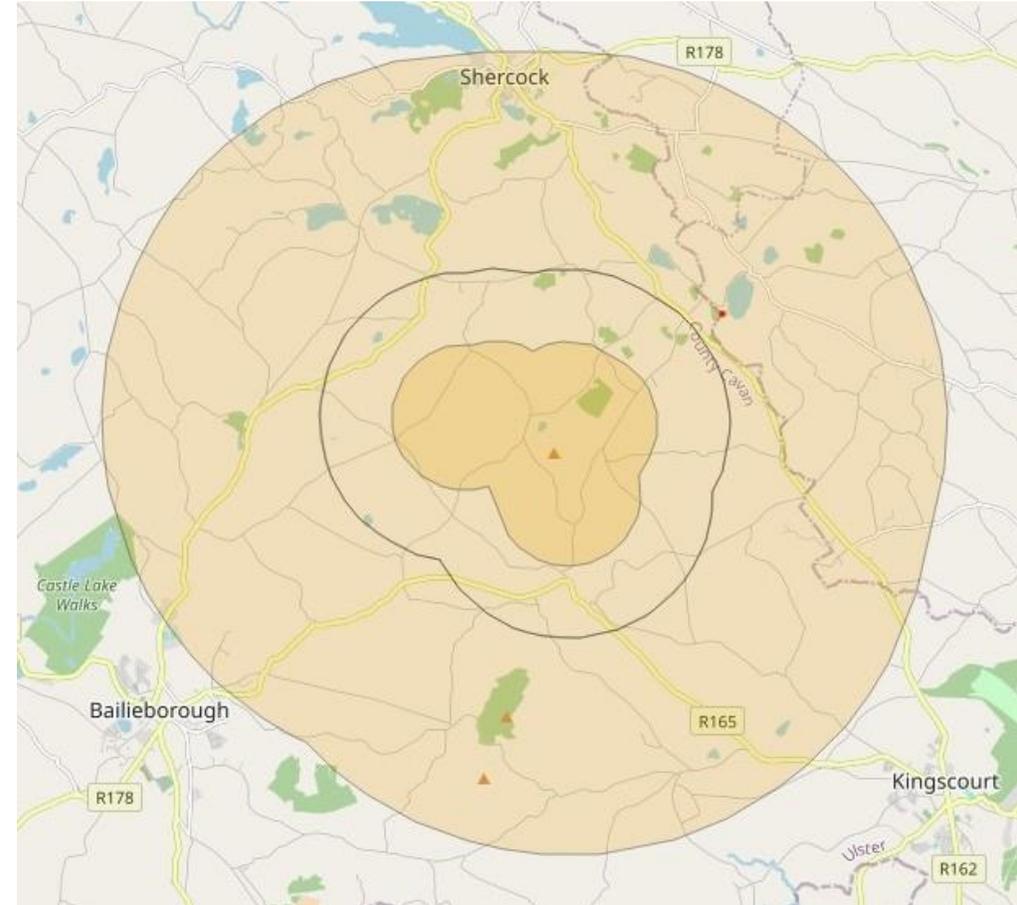
2. Sampling strategy

- In some cases, the conjunction of two RESS1 sites were sampled
  - <1km from either site
  - 1-2km from either site
  - 2-5km from both sites

- Combining multiple RESS1 sites into single sample areas may allow the effects of being near multiple sites to be investigated
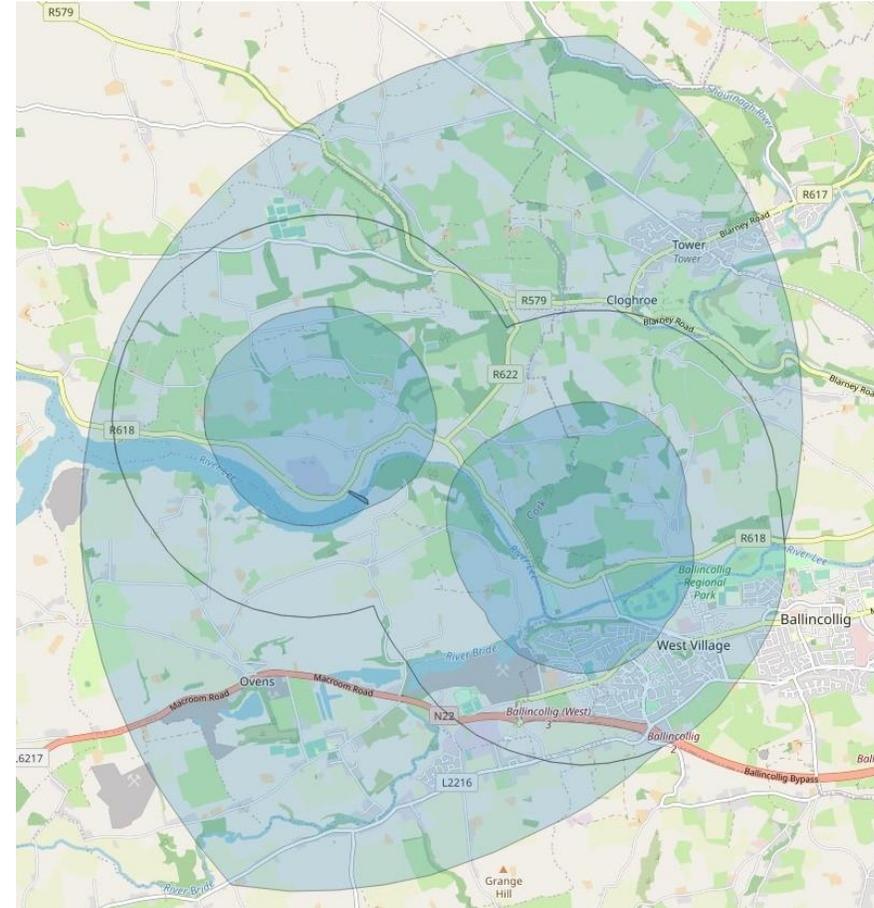
2. Sampling strategy

- The control sampling areas are Electoral Districts (ED) >10km from a RESS1 site
  - Control areas were selected using propensity score matching (PSM) with the treatment areas
  - Each ED site is matched to its 'nearest neighbour' control ED by propensity score
  - Matching covariates were
    - Age
    - Gender
    - Pop. Density
    - Household size
    - Distance to existing windfarms

- The target was 10 interviews at each of the 50 control areas
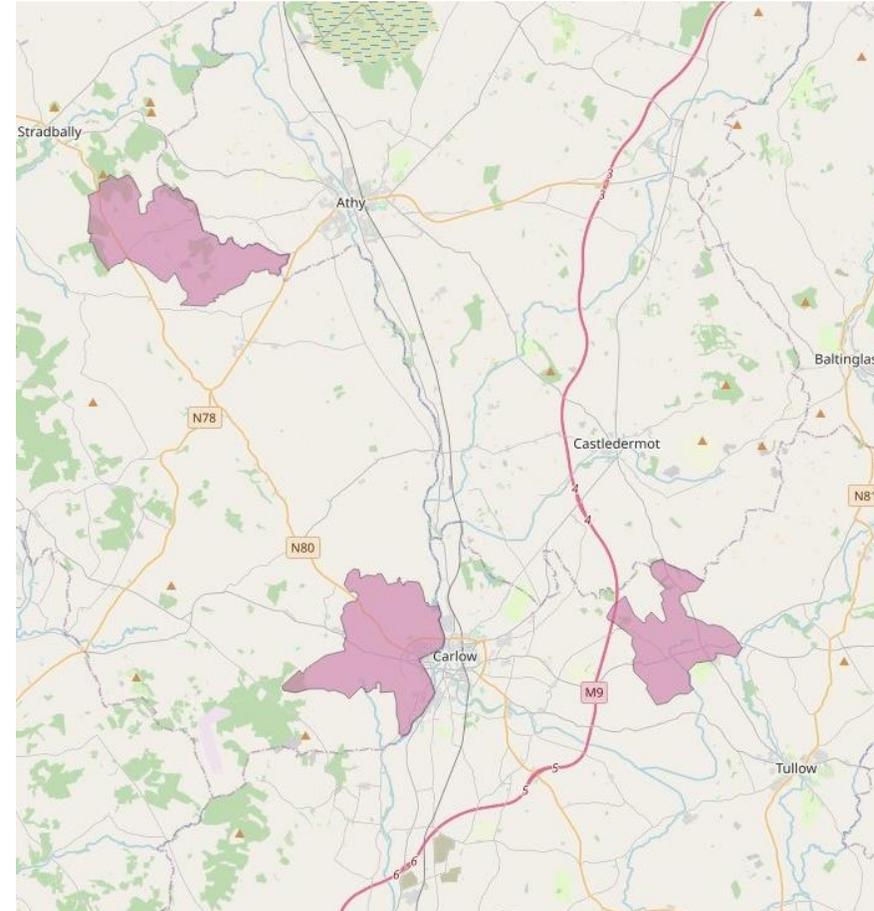
2. Sampling strategy

- The quality of the propensity score matching was evaluated using distributional balance and standardized mean differences and found to be satisfactory

- The graphs show the distributional balance for propensity scores ("distance") in the unadjusted and adjusted control areas as compared to the treatment areas

- The adjusted sample matches very well

Distributional Balance for "distance"
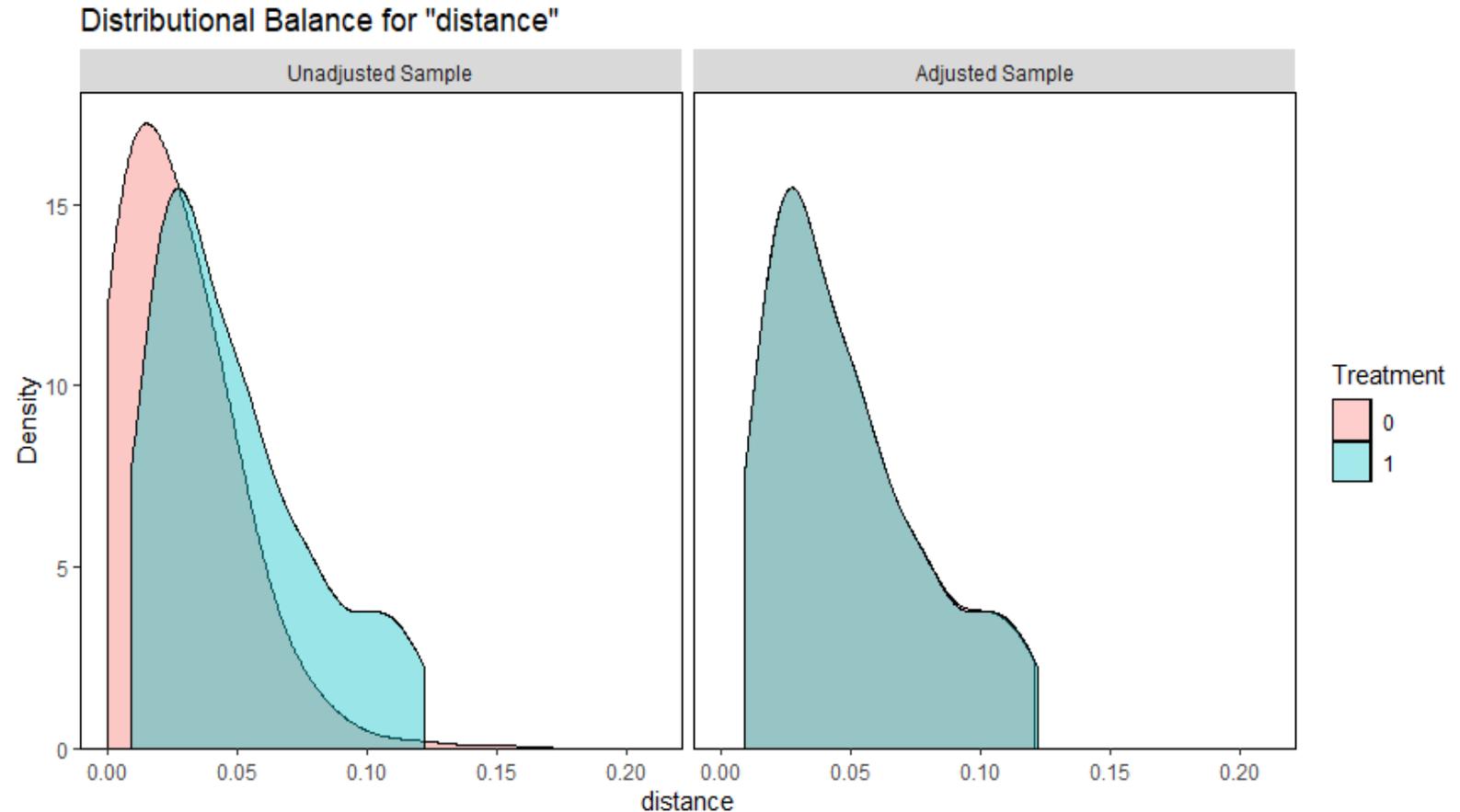
2. Sampling strategy

- After the pilot survey certain sites were identified as having too few residences near them

- To the right is one of these sites
  - The small black dots are the nearest residences
  - None are <1km to the site

- As this was the case for only a few sites, all were evaluated visually and the problematic ones had their interviews redistributed to others
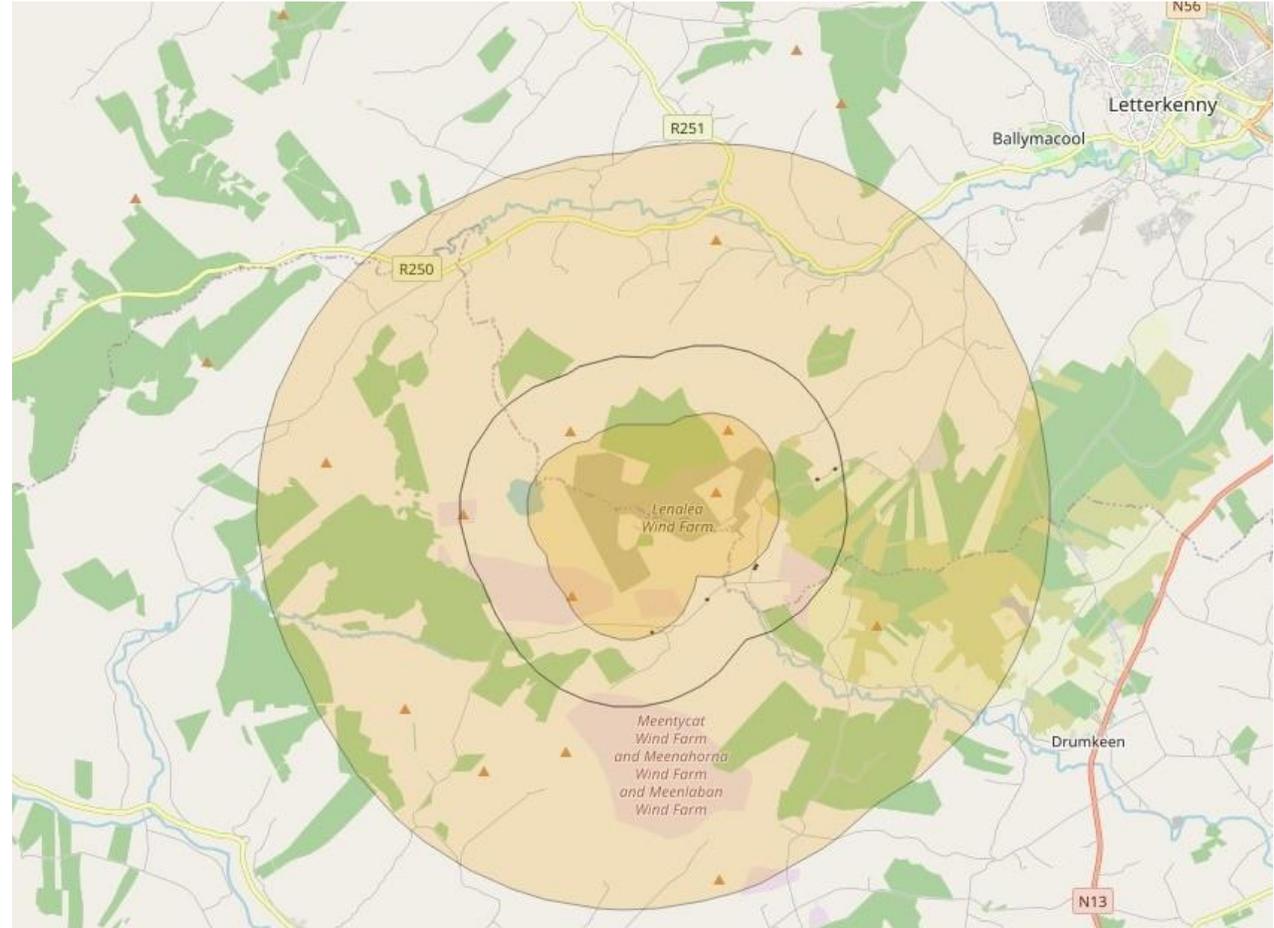
2. Sampling strategy

- Below we list a summary of interview participants by distance and technology (excluding control group)
- In 276 cases, the interviews took place in areas which intersected between RESS1 sites, and the closest site was used to categorize the distance
- In 100 cases, the interviews took place around the site of a 'community-led project', as defined by RESS1 T&Cs.

Total number of interviews by RESS1 site and technology, for treatment areas								
Total	**Solar**			**Wind**			**Intersecting project areas (<5km)**	**Community-led projects**
	0-1km	**1-2km**	**2-5km**	**0-1km**	**1-2km**	**2-5km**		
	143	194	349	76	156	198	276	100

2. Sampling strategy

- After the first round of interviews, Indecon checked if there were any gaps that needed to be filled, for example
  - Around community-led projects
  - <1km from wind farms
- Statistical analysis of the results was done to see if more interviews were needed to make findings statistically significant
  - E.g., based on t-tests of differences between means
  - The analysis indicated that increasing the sample size would likely improve statistical significance on some differences between means for some of the questions
  - SEAI decided with the consulting team to increase the sample size by 250
- Additional interviews were conducted around sites deemed to be well populated but which had a sparsity of successful interviews in the first round
- After these interviews, some gaps were filled further with potential interview locations identified by Eircode
- Sampling finished with nearly 1800 interviews

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2. Sampling strategy

- Gap filling interviews were conducted around 3 sites that had already been surveyed, but were populated well enough to find more interviews

- Eircodes within 100m of a previous interview (red circles) were excluded to avoid overlap with previous surveys

- The remaining Eircodes (green dots) were used to find these last interviews
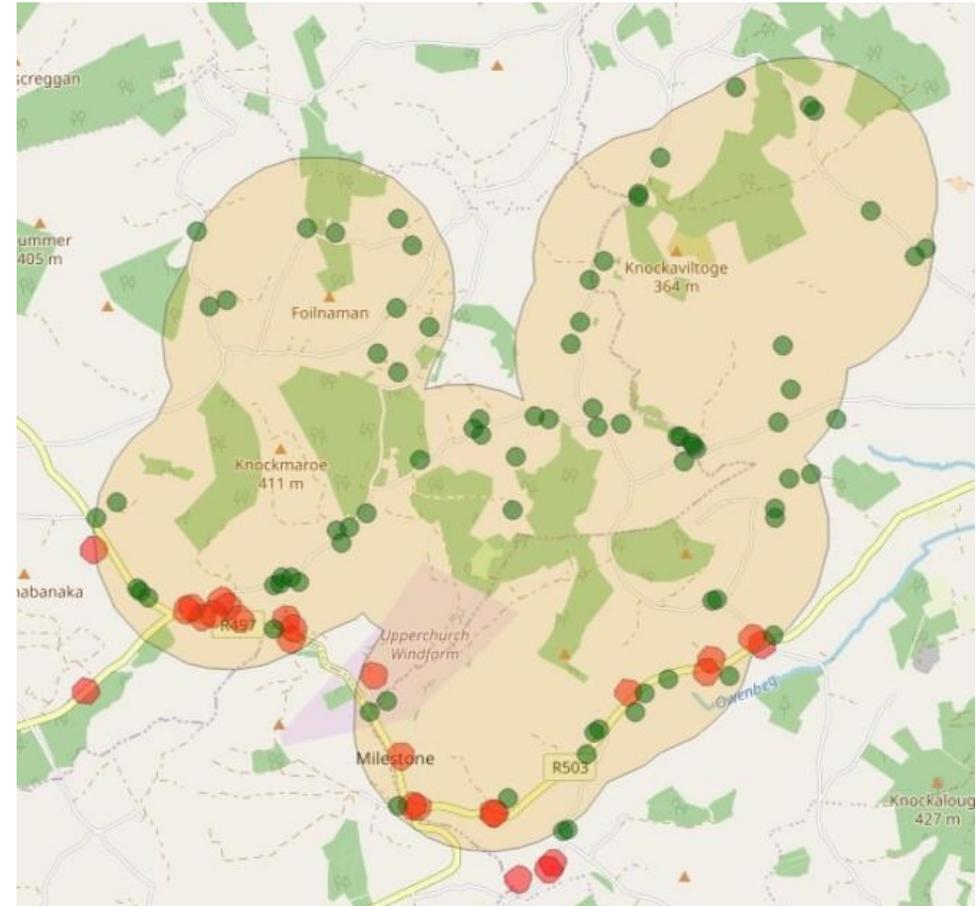
3. Socio-demographics

2. Socio-demographics

- The following slides give details on the socio-demographics of respondents, showing little difference between treatment and control groups
- The sampling strategy started with a broad definition of where treatment and control might be defined by distance
  - Treatment defined as 0-5km of RESS1 project site
  - Control defined as >10km from RESS1 site
- 50 treatment sites were chosen including all available wind farms and a selection of solar farms
- Small area and ED CSO census data was then used to match each site to a control area
  - Note population statistics are for the local EDs, not national population
- Detailed statistical analysis was also done
  - It should be noted that in the 2nd stage of the study, ex post statistical method such as econometric modelling can be used to control for any variations across treatment and control areas

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2. Socio-demographics

- The graph shows the relative frequency of each age bracket between treatment and control
- Both groups exhibit a bell-shaped distribution across age brackets

Age of survey respondents
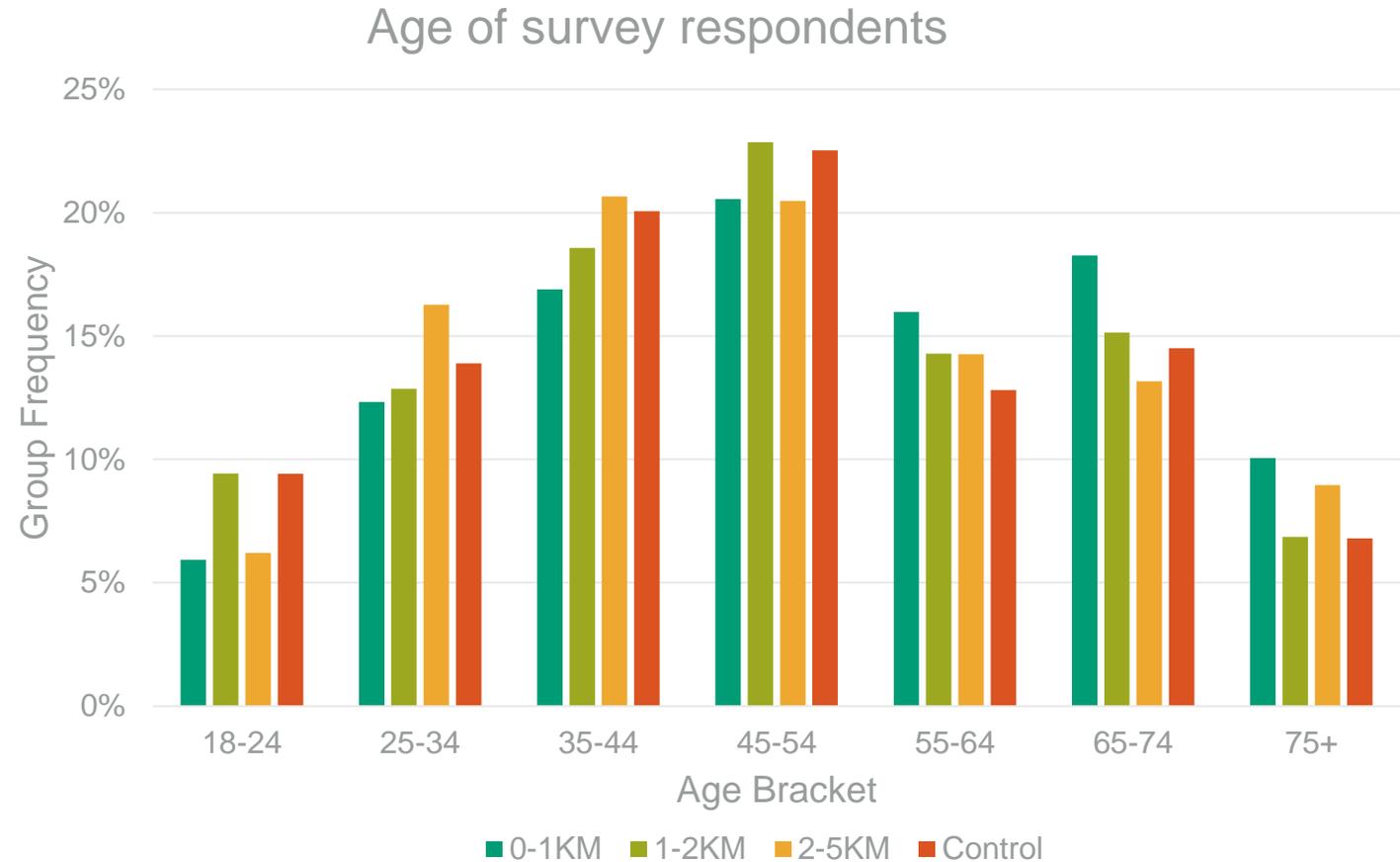
2. Socio-demographics

- The graph shows the relative frequency of genders between treatment and control

- We observe that all groups, except for the 0-1km treatment group, have a near 50:50 split between male and female

- Overall results are consistent with 2022 Census which finds a 49.4% male and 50.6% female split

Gender of survey respondents

Y-axis: Group Frequency (0% to 100%)
X-axis: Gender

Group	Male	Female
0-1KM	60%	40%
1-2KM	49%	51%
2-5KM	49%	51%
Control	50%	50%

■ Male ■ Female

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2. Socio-demographics

- The graph shows the relative frequency of each type of educational status between treatment and control

- We observe that the treatment group has a slightly greater proportion of secondary level education than the control

- The control group has a somewhat greater proportion of post-secondary and university or college than the treatment
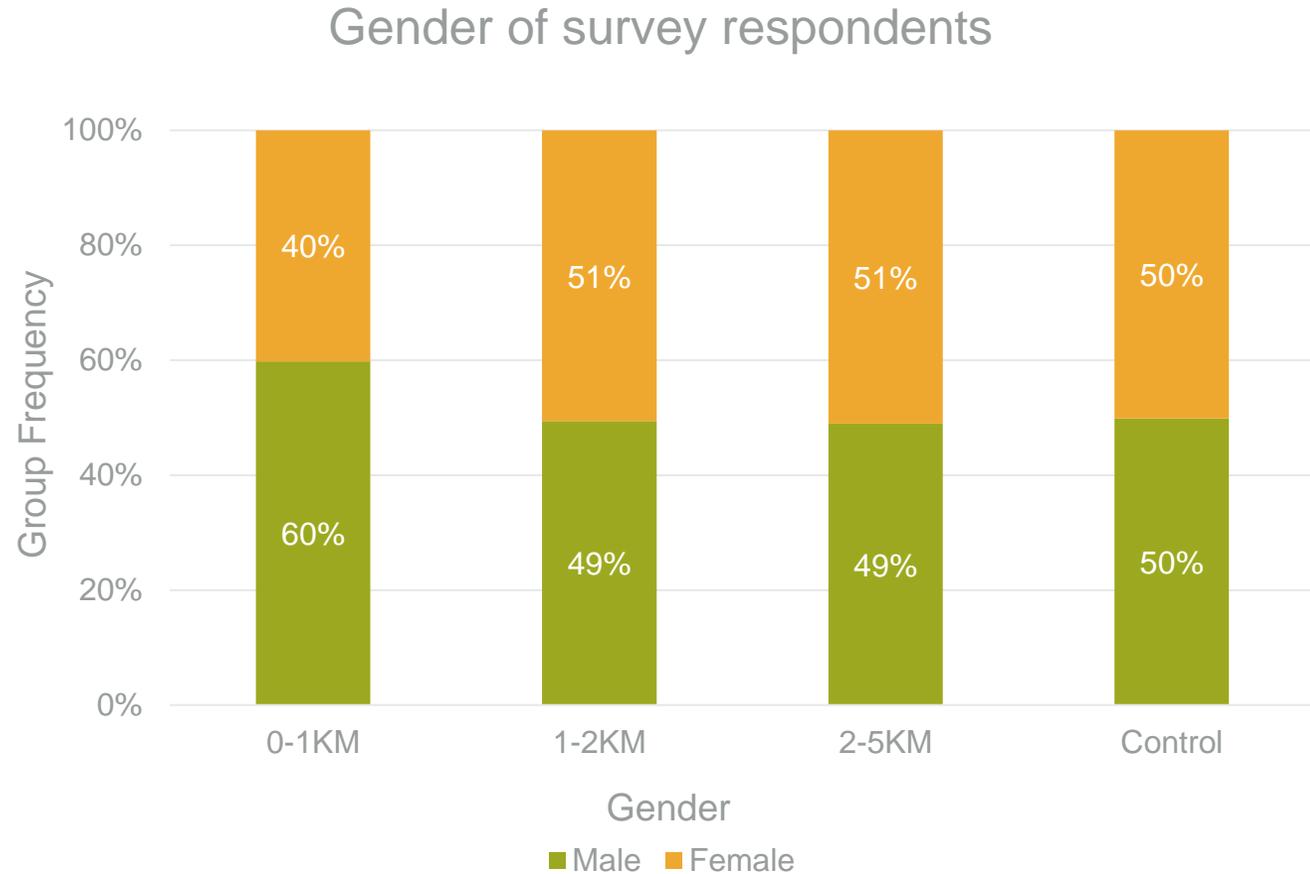
Education of survey respondents
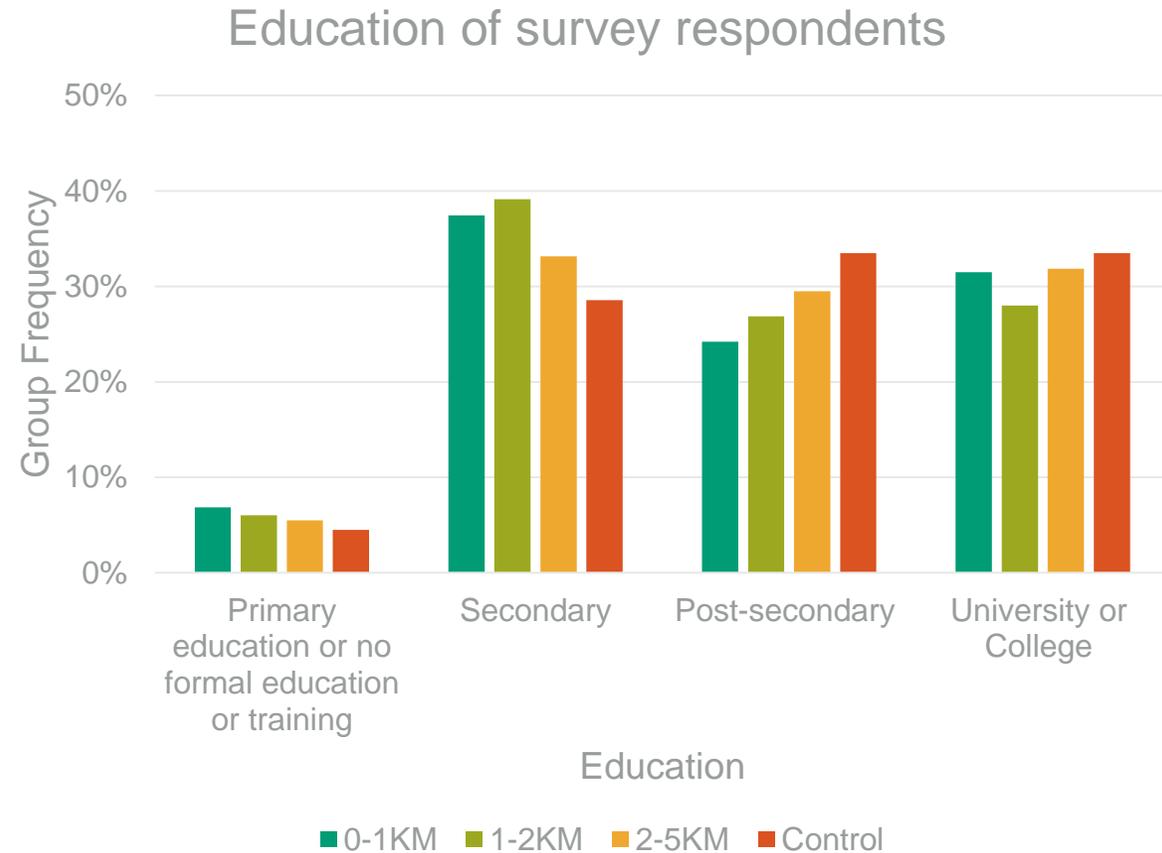
2. Socio-demographics

- The graph shows the relative frequency of each type of economic status between treatment and control
- Both groups exhibit similar distributions across economic status
- The largest % frequency in both groups is respondents who state they are working for payment/profit

Present Principal Status of survey respondents
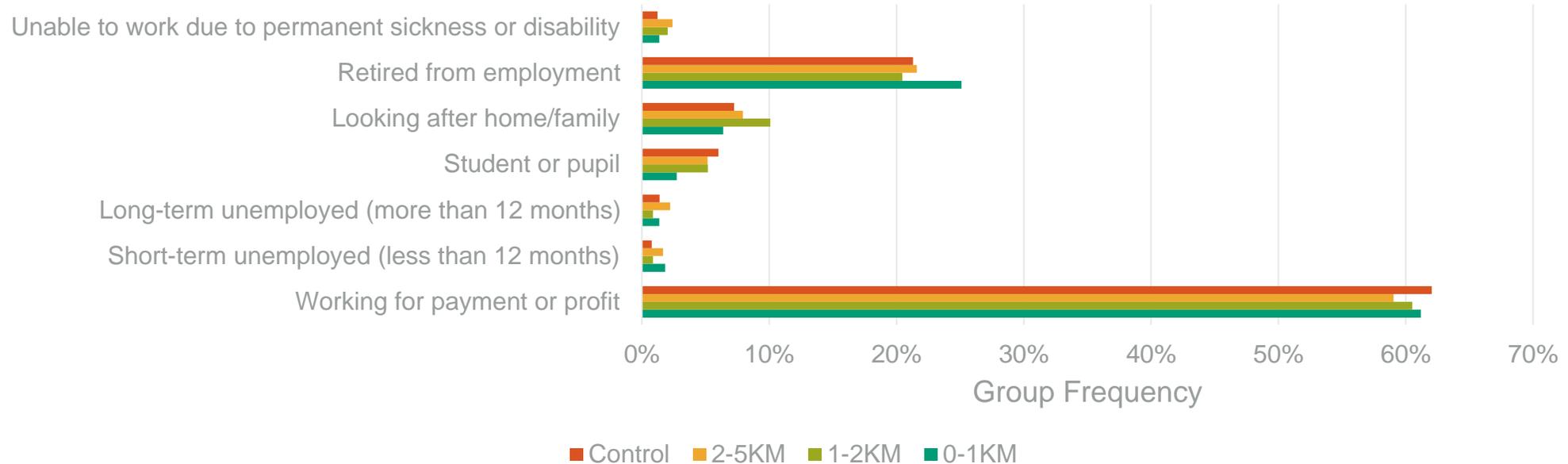
2. Socio-demographics

- The graph shows the relative frequency of each type of tenure status between treatment and control

- We observe that both groups exhibit similar distributions of tenure status

- Much larger proportions of respondents claim to own rather than rent which is expected in rural areas

Tenure Status of survey respondents
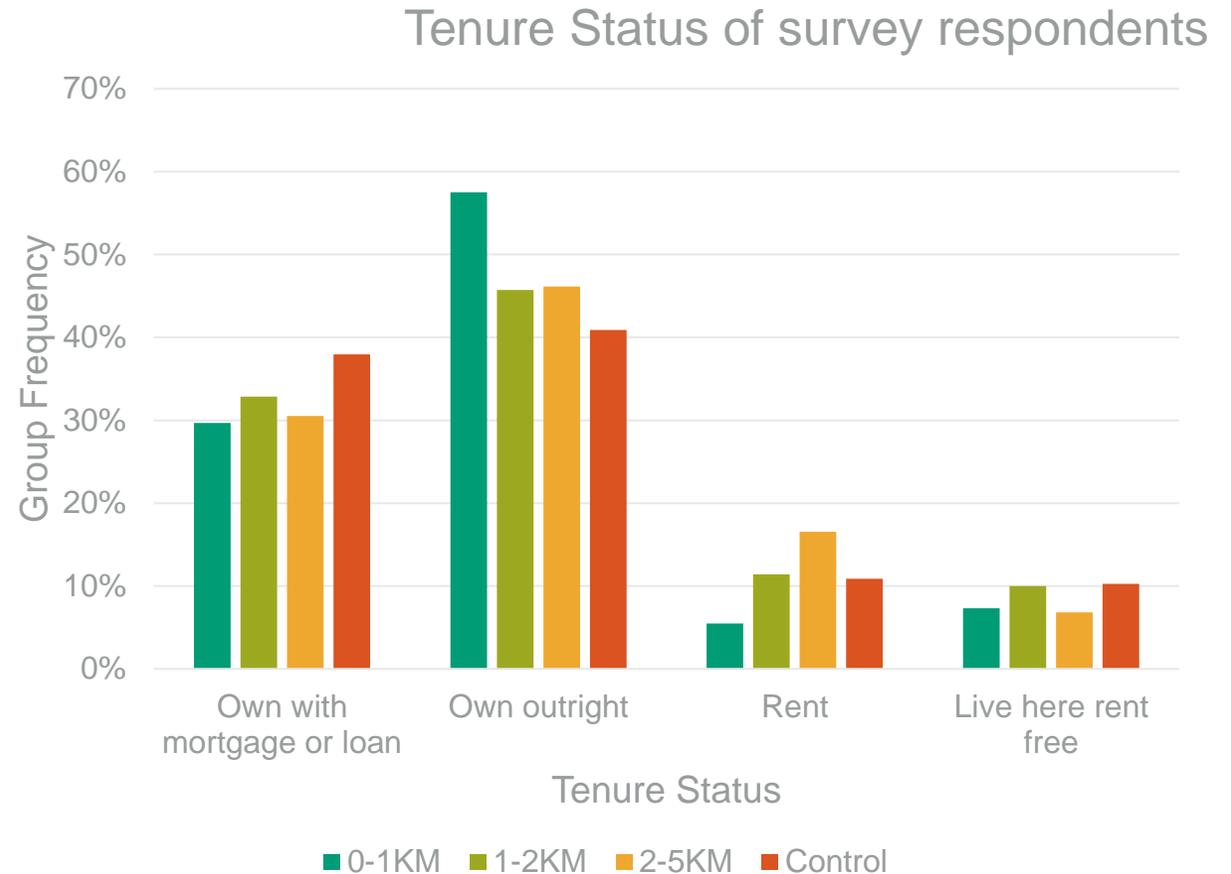
2. Socio-demographics

- The graph shows the frequency of renewable energy use between treatment and control
- A large proportion of both the treatment and control claim to use insulation upgrades and wood

Renewable Energy Use of survey respondents
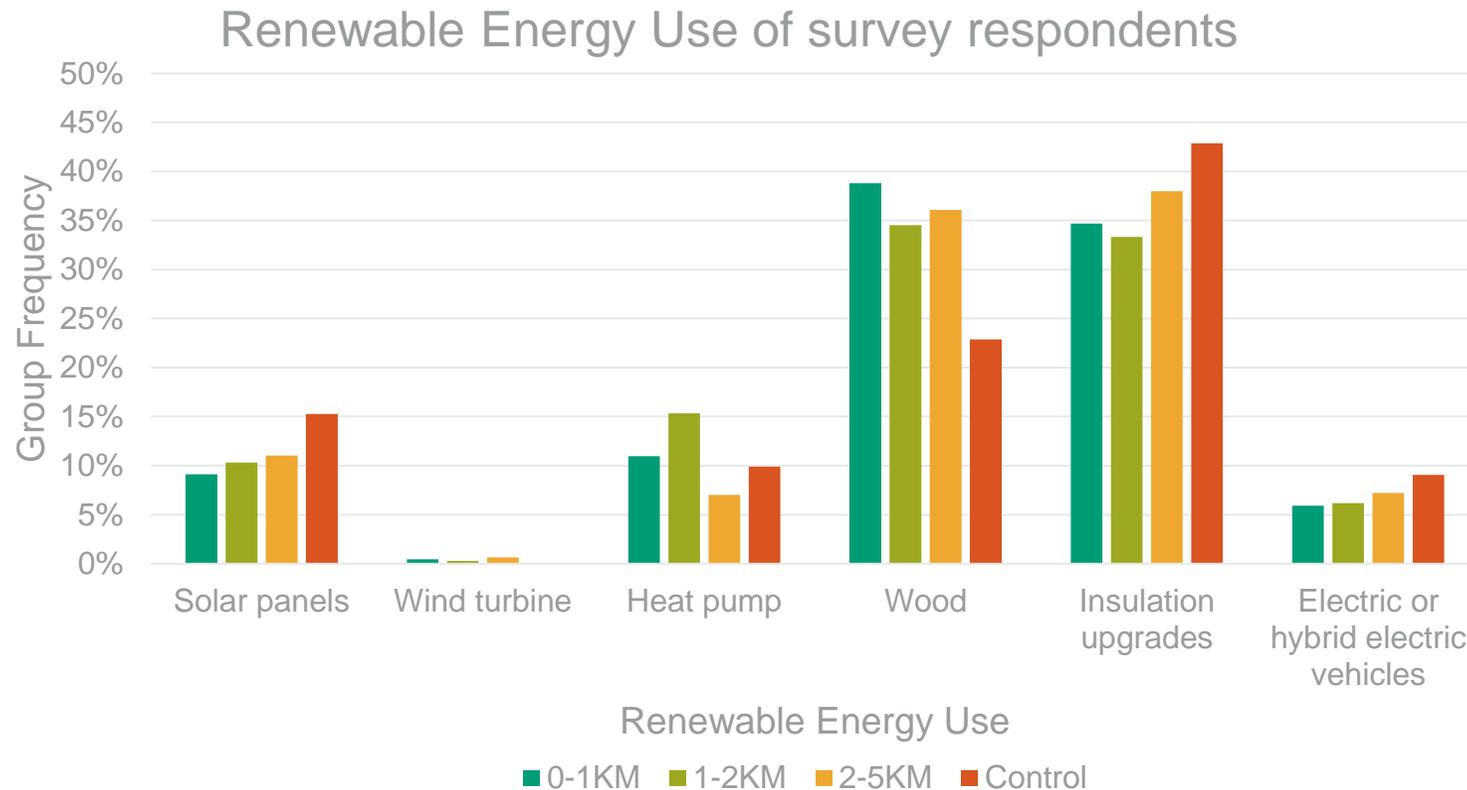
4. Results

4. Results

1. Attitudes to wind and solar PV energy

2. Experience of wind and solar PV energy

3. Attitudes to local wind and solar PV project(s)

4. Engagement and the planning process

5. Household and community benefits

4.1 Results: Attitudes to renewable energy

- 67% of respondents hold positive or very positive views towards wind energy
- 73% of respondents who live <1km of a RESS1 *wind* project hold positive or very positive attitudes towards wind energy, while 70% of those in the control group hold such views

How positive or negative are you towards wind farms? (n=810)

Distance to RESS1 wind project	Very positive	Positive	Neutral	Negative	Very negative	Don't Know
Total	23%	44%	18%	8%	4%	3%
Control	22%	48%	17%	7%	3%	3%
2-5km	22%	39%	20%	10%	5%	4%
1-2km	22%	41%	21%	8%	5%	3%
0-1km	33%	40%	13%	5%	8%	1%

4.1 Results: Attitudes to renewable energy

- 59% of respondents feel Ireland has too few wind farms

- 65% of respondents <1km from a RESS1 *wind* project feel Ireland has too few wind farms; the same proportion as the control group

- Few respondents feel Ireland has too many wind farms, regardless of how close they live to a new wind farm

What is your opinion about wind energy projects? (n=810)

Distance to RESS1 wind site	We have too few we should increase the number	We have enough we do not need any more	Don't Know	We have too many we should remove some of them
Total	59%	18%	15%	8%
Control	65%	13%	16%	6%
2-5km	54%	24%	15%	7%
1-2km	49%	24%	15%	11%
0-1km	65%	16%	12%	8%

■ We have too few we should increase the number ■ We have enough we do not need any more
■ Don't Know ■ We have too many we should remove some of them

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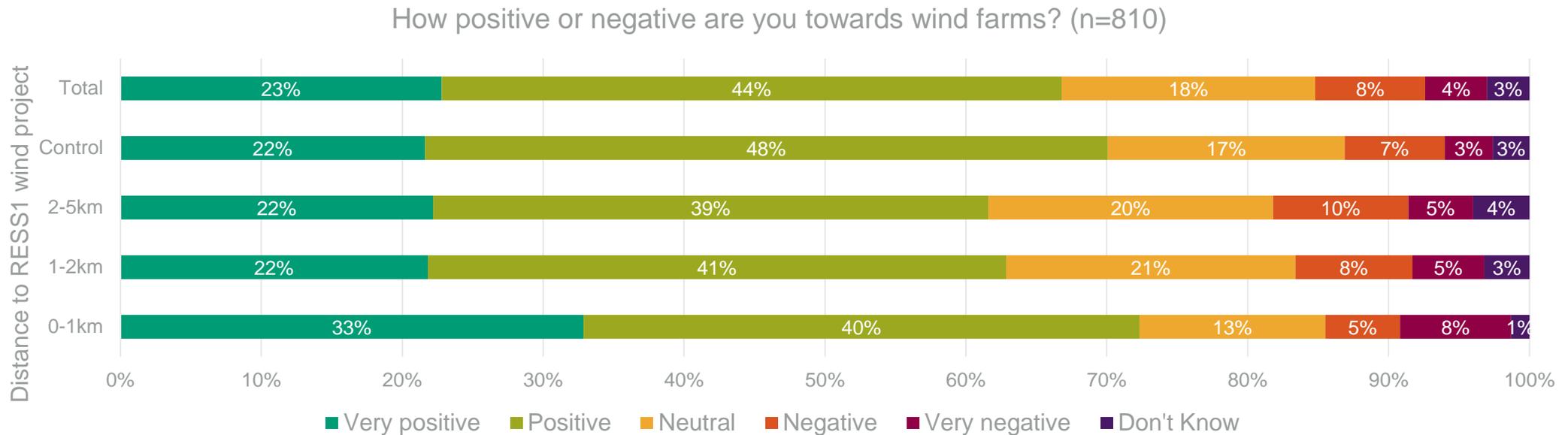
4.1 Results: Attitudes to renewable energy

- 81% of respondents hold positive or very positive views towards solar PV farms
- 82% of respondents who live <1km from a RESS1 *solar* project hold positive or very positive attitudes towards solar PV farms while 80% in the control group hold these views
- Very few respondents hold negative views on solar PV farms, regardless of their distance from a new project

How positive or negative are you towards solar PV farms? (n=954)
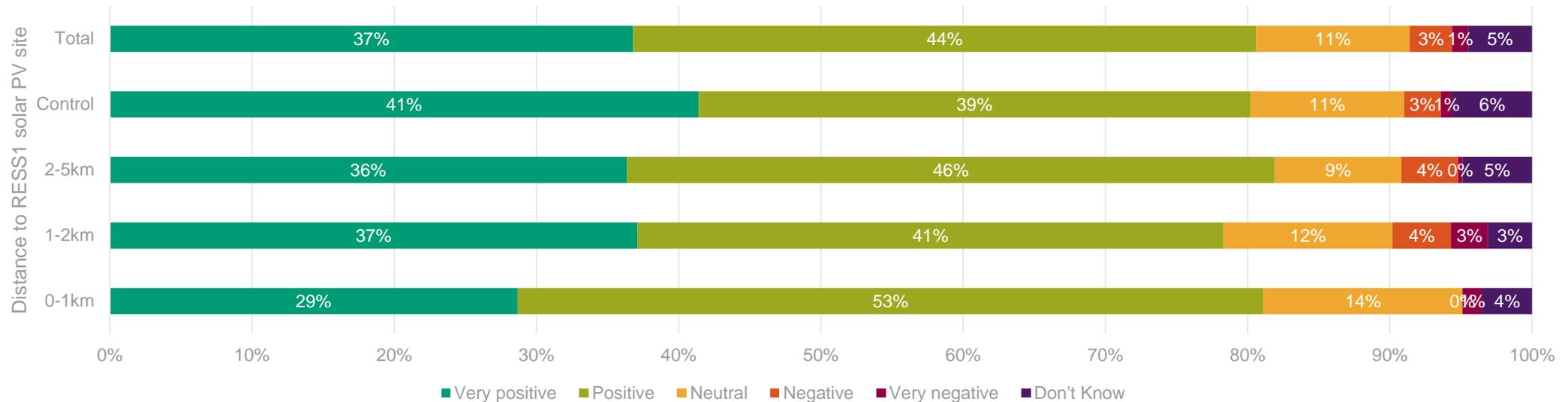
4.1 Results: Attitudes to renewable energy

- 78% of respondents feel Ireland has too few solar PV farms

- 82% of respondents who live <1km from a RESS1 *solar* project feel Ireland has too few solar farms

- Almost no respondents think Ireland has too many solar PV farms, regardless of their proximity to a new project

What is your opinion about solar energy projects? (n=954)

Distance to RESS1 solar PV site	Too few	Enough	Don't Know	Too many
Total	78%	4%	17%	1%
Control	79%	2%	19%	1%
2-5km	79%	4%	16%	1%
1-2km	72%	7%	20%	1%
0-1km	82%	5%	13%	1%

Legend:
- ■ We have too few we should increase the number
- ■ We have enough we do not need any more
- ■ Don't Know
- ■ We have too many we should remove some of them

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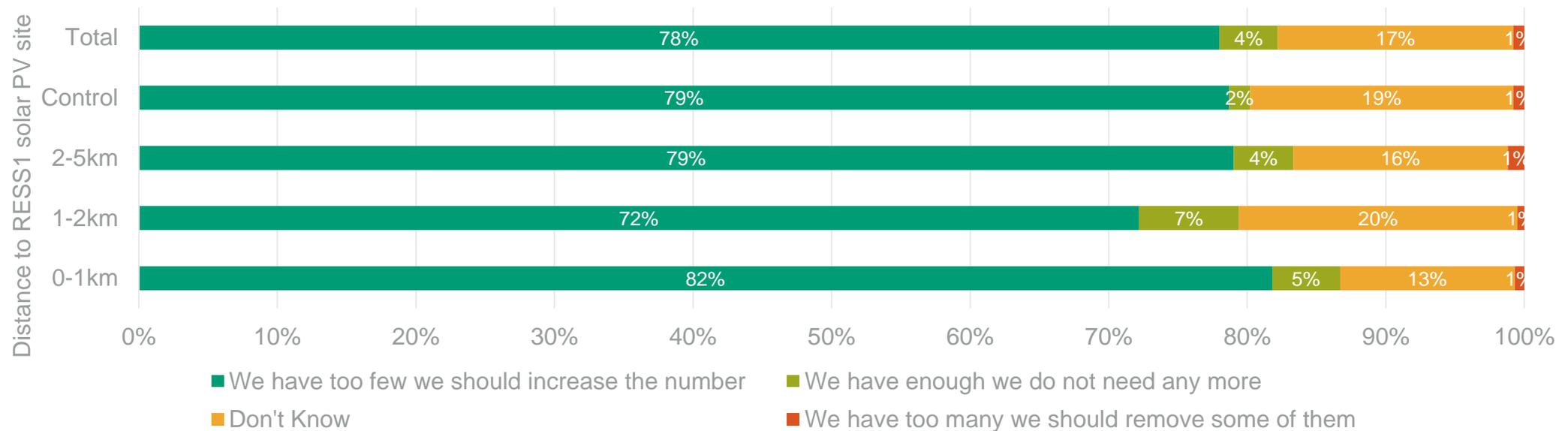
4.2 Results: Experience of renewable energy

- 87% of respondents feel they know at least a little about wind energy
- 22-28% of respondents in the treatment group feel they know a lot about wind, compared to 12% in the control group

How familiar are you with wind energy? (n=810)

Distance to RESS1 wind farm	Know a lot about it	Know a little about it	Have heard of it but know nothing about it	Never heard of it	Don't know
Total	19%	68%	13%		0%
Control	12%	71%	17%		0%
2-5km	28%	66%	6%		0%
1-2km	22%	64%	14%		0% 1%
0-1km	25%	66%	8%	1%	0%

Legend: ■ Know a lot about it ■ Know a little about it ■ Have heard of it but know nothing about it ■ Never heard of it ■ Don't know
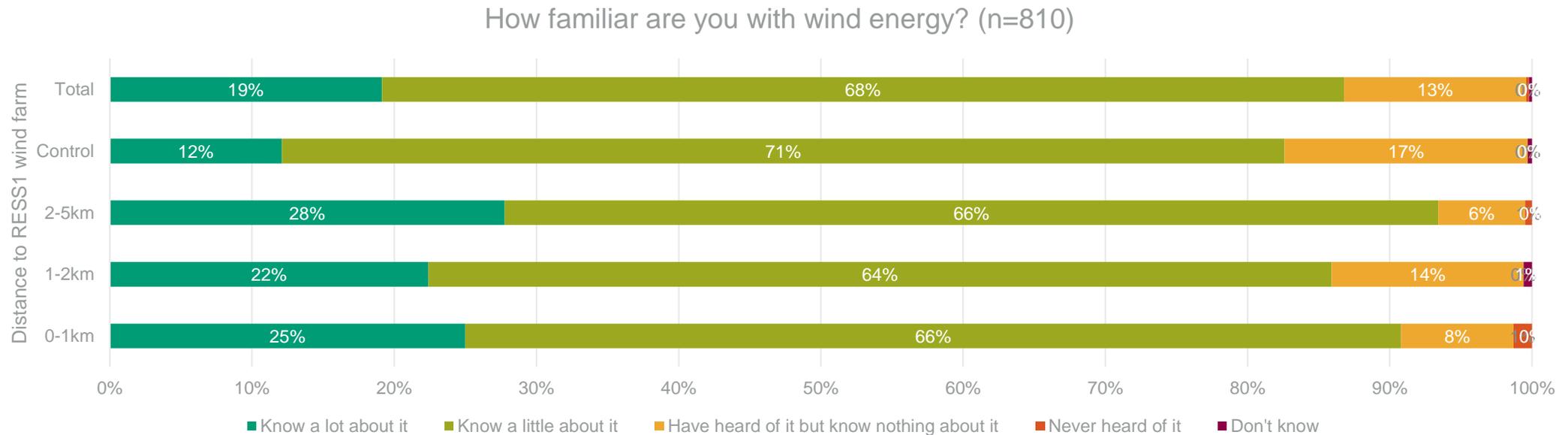
4.2 Results: Experience of renewable energy

- 80% of respondents feel they know at least a little about solar energy
- 18-24% of respondents in the treatment group feel they know a lot about solar, compared to 11% in the control group

How familiar are you with solar energy? (n=954)

Distance to RESS1 solar project	Know a lot about it	Know a little about it	Have heard of it but know nothing about it	Never heard of it	Don't know
Total	19%	61%	19%	0%	1%
Control	11%	61%	27%	0%	0%
2-5km	24%	59%	16%	0%	1%
1-2km	24%	62%	13%	1%	1%
0-1km	18%	64%	17%	1%	1%

Legend: ■ Know a lot about it ■ Know a little about it ■ Have heard of it but know nothing about it ■ Never heard of it ■ Don't know

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4.2 Results: Experience of renewable energy

- Almost no respondents can see a solar PV farm from their property
- 42-47% of respondents in the treatment group can see a wind farm from their property, compared to 36% in the control group (i.e. respondents close to 'legacy projects' built before RESS1

Currently, can you see any wind or solar farms from anywhere on your property? (n=1765)

Distance to RESS1 project: ■ 0-1km ■ 1-2km ■ 2-5km ■ Control

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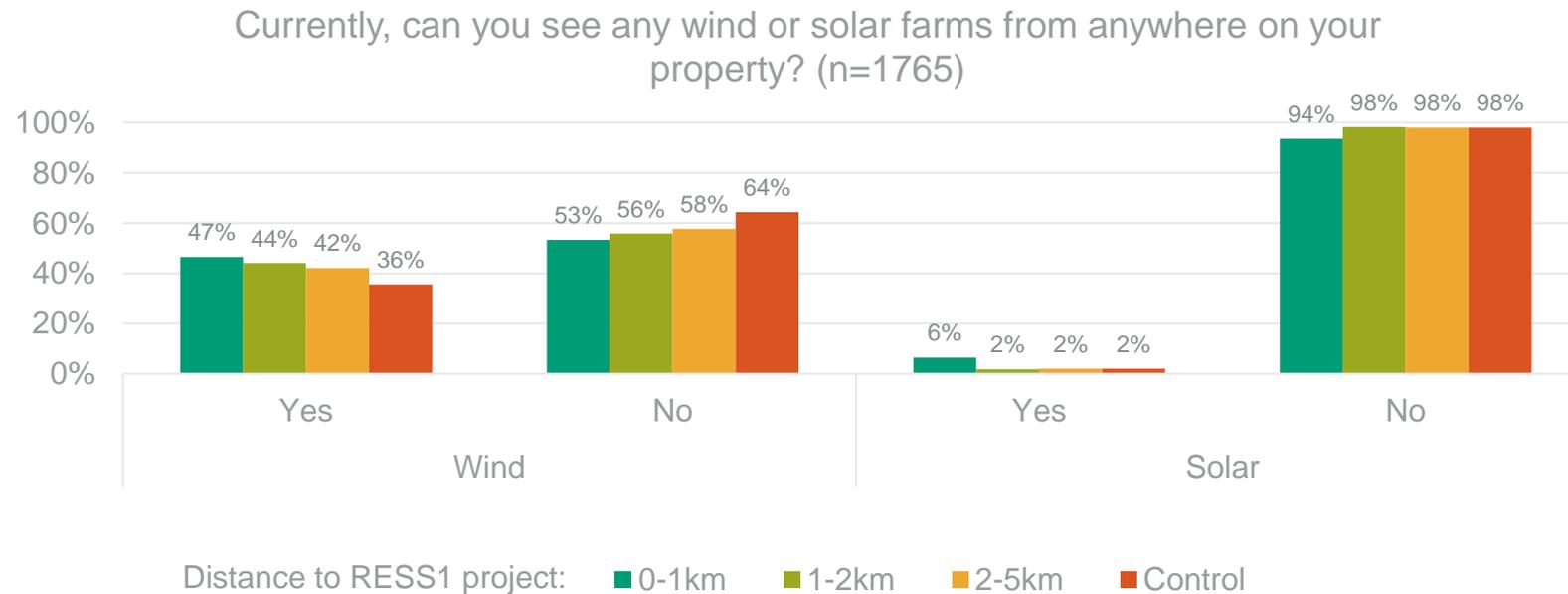
4.2 Results: Experience of renewable energy

- For respondents who can't see a solar or wind farm from their property, 82% never come across solar farms, while 24% never come across wind farms
- Most respondents come across wind farms at least on a monthly basis, regardless of proximity to a RESS1 project

How often, if at all, do you come across or see wind/solar farms in Ireland?

	Daily	Weekly	Monthly	Never	Don't know
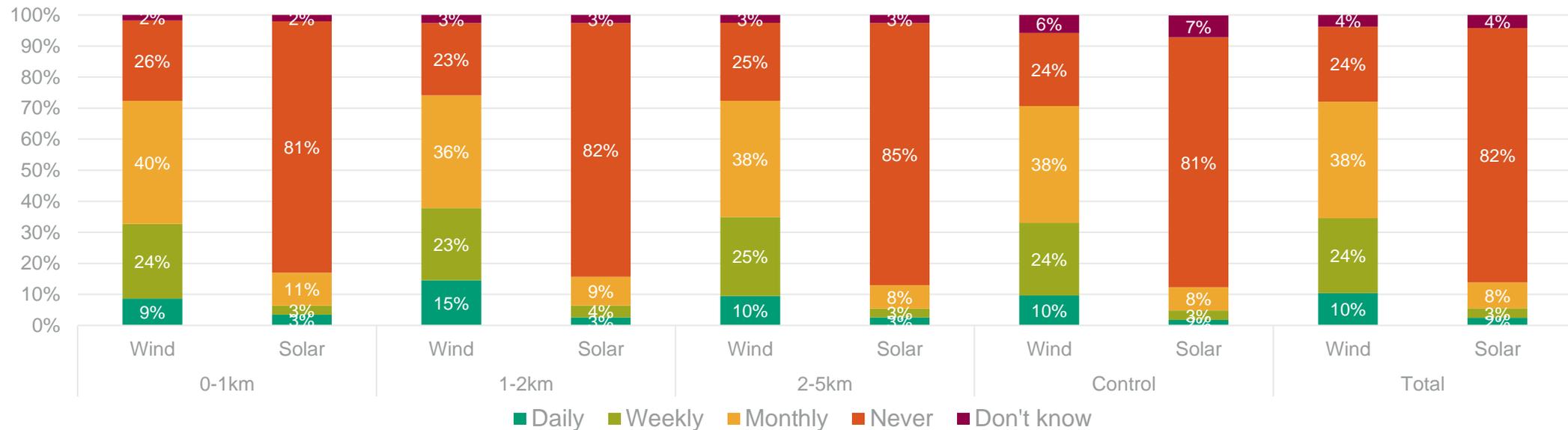
4.2 Results: Experience of renewable energy

- Most respondents are positive or very positive towards the wind farms they come across, regardless of whether that is on daily, weekly or monthly basis

Thinking of any wind farms that you do come across or see, what is your attitude towards them?

Very positive ■ Positive ■ Neutral ■ Negative ■ Very negative ■ Don't know
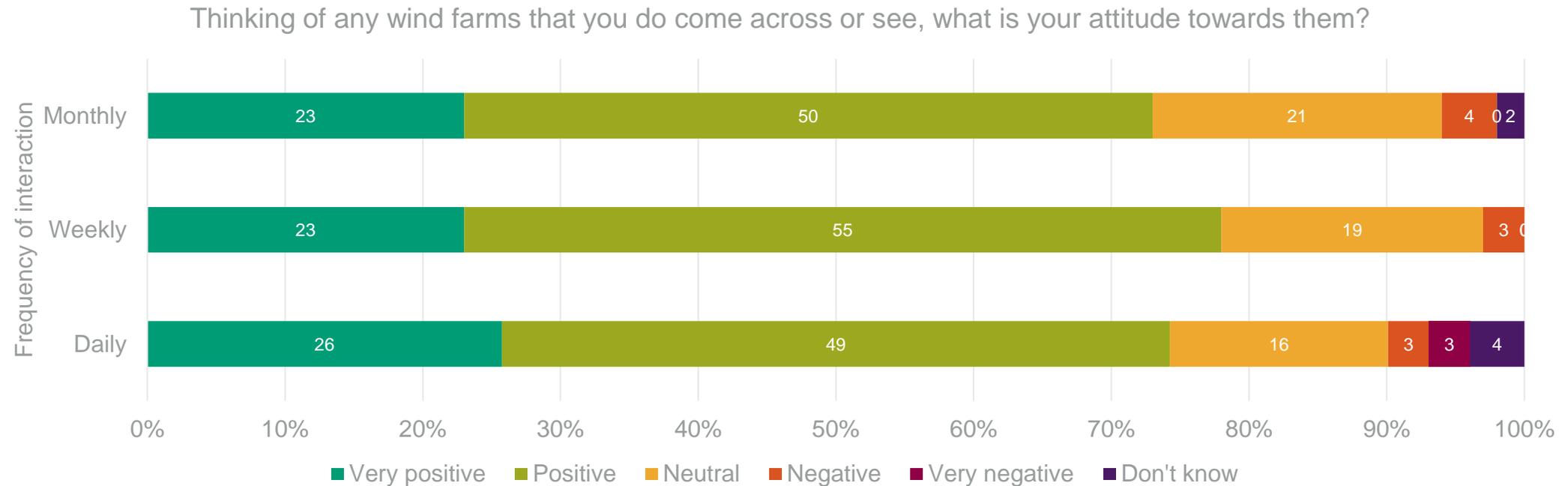
4.2 Results: Experience of renewable energy

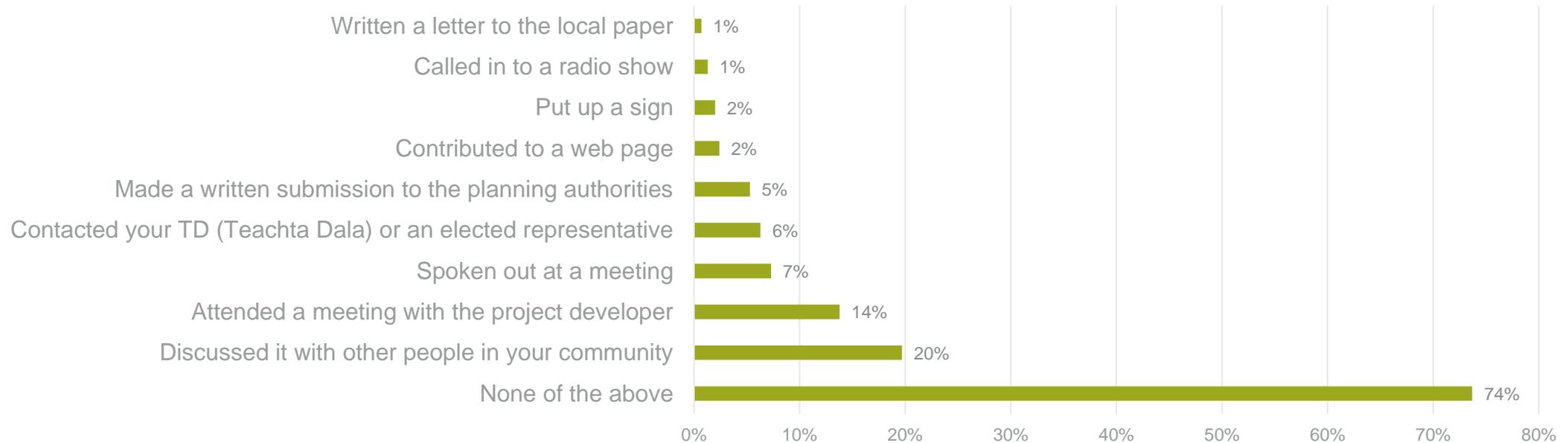- The most common actions undertaken by respondents to an existing project close to them are discussing it with community members and attending a meeting with the project developer

Have you taken any of the following actions with regards to the existing wind or solar farm close to you, during the planning process or after construction/operation?

Action	Percentage
Written a letter to the local paper	1%
Called in to a radio show	1%
Put up a sign	2%
Contributed to a web page	2%
Made a written submission to the planning authorities	5%
Contacted your TD (Teachta Dala) or an elected representative	6%
Spoken out at a meeting	7%
Attended a meeting with the project developer	14%
Discussed it with other people in your community	20%
None of the above	74%

4.2 Results: Experience of renewable energy

- Respondents are much more likely to take action(s) regarding a local wind/solar farm if they have a negative attitude towards a local project
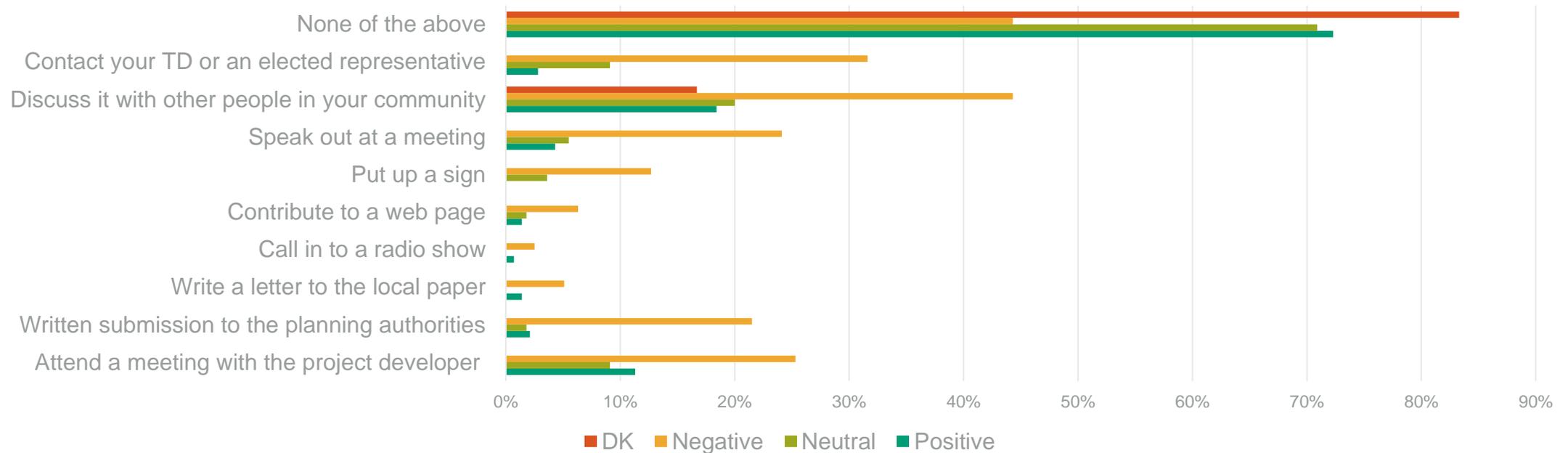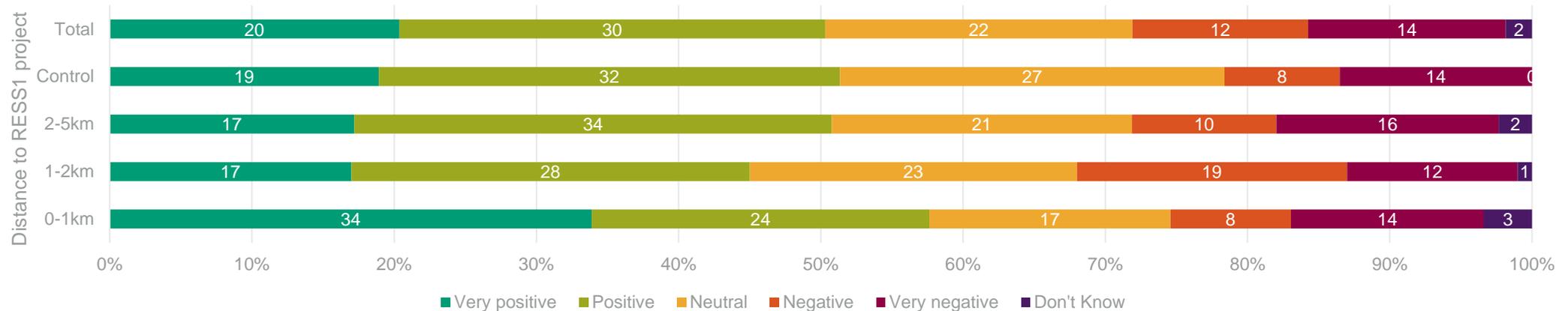

Have you taken any of the following actions with regards to the existing wind or solar farm close to you, during the planning process or after construction/operation?

Legend: DK, Negative, Neutral, Positive

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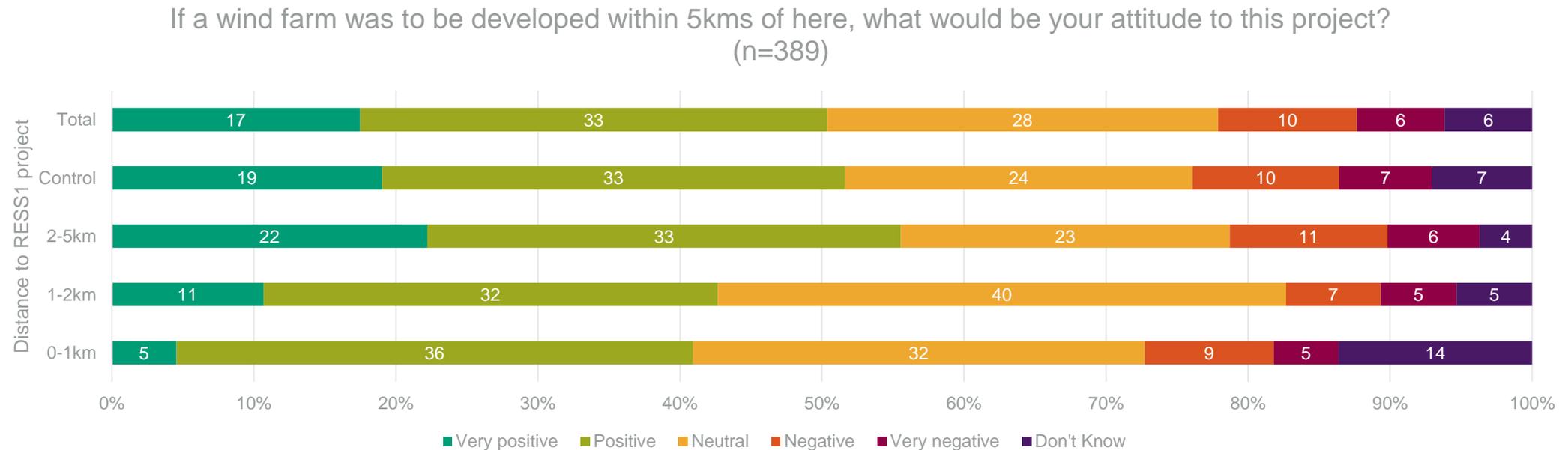# 4.3 Results: Attitude to local wind and solar project

- Respondents were asked if they knew of any wind/solar farms being planned or under development in their area (<5km from where they live). If they knew of any, we asked them their attitude to this project. If they did not know of any, we asked them their attitude to a hypothetical new wind/solar farm project in their area.

- 58% of those <1km to a RESS1 site felt positive or very positive towards the local wind project under development, compared to 45% of those who live 1-2km from the project

What is your attitude to the wind farm(s) being planned or under development in your area, that is within 5kms of here? (n=324)

Legend: ■ Very positive ■ Positive ■ Neutral ■ Negative ■ Very negative ■ Don't Know

Distance to RESS1 project	Very positive	Positive	Neutral	Negative	Very negative	Don't Know
Total	20	30	22	12	14	2
Control	19	32	27	8	14	0
2-5km	17	34	21	10	16	2
1-2km	17	28	23	19	12	1
0-1km	34	24	17	8	14	3

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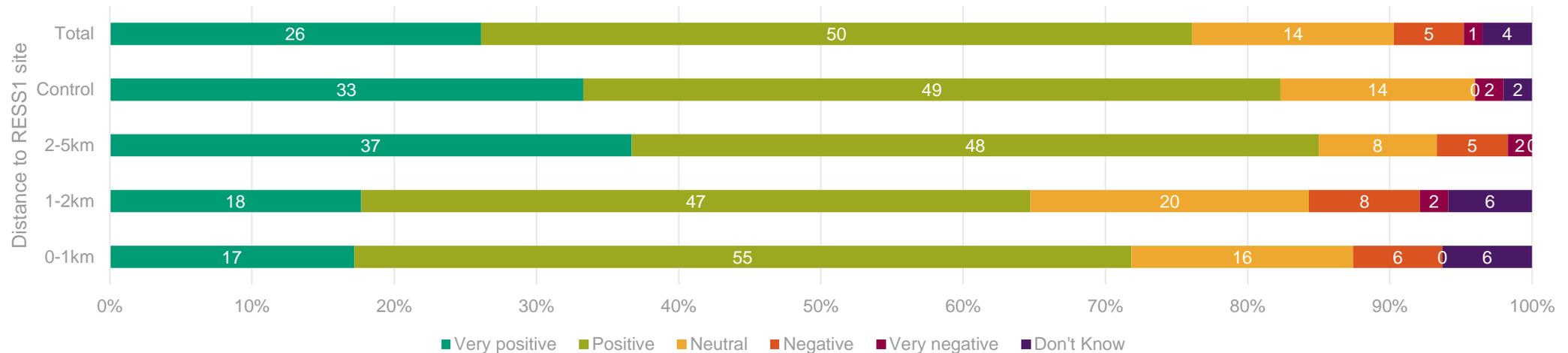# 4.3 Results: Attitude to local wind and solar project

- 41% of respondents <1km from a RESS1 site (who were not aware of a local project under development) felt positive or very positive towards a *hypothetical* local wind project, compared to 52% in the control group

If a wind farm was to be developed within 5kms of here, what would be your attitude to this project?
(n=389)

Distance to RESS1 project	Very positive	Positive	Neutral	Negative	Very negative	Don't Know
Total	17	33	28	10	6	6
Control	19	33	24	10	7	7
2-5km	22	33	23	11	6	4
1-2km	11	32	40	7	5	5
0-1km	5	36	32	9	5	14

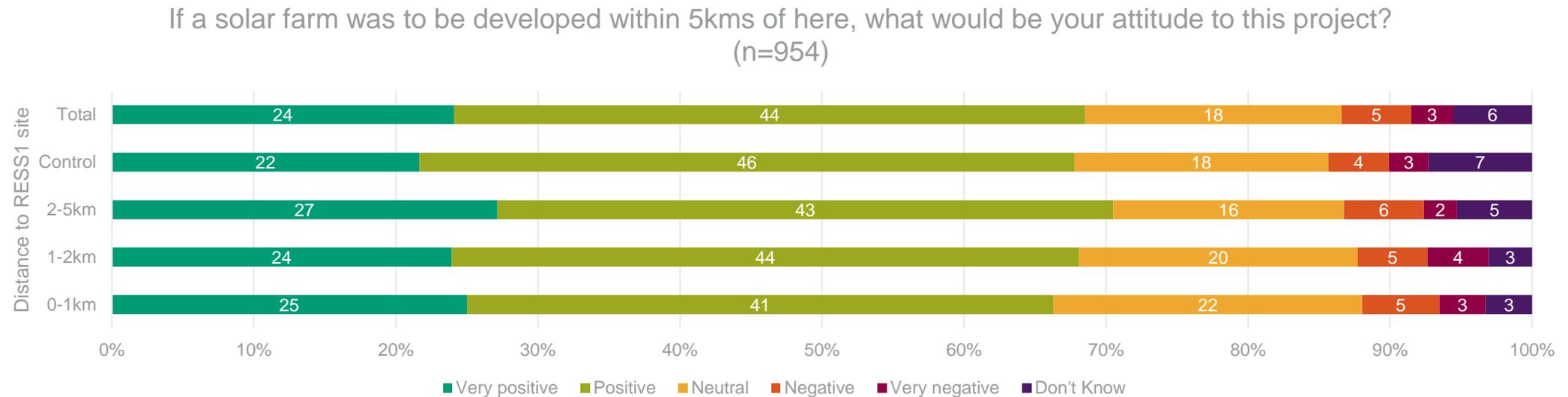# 4.3 Results: Attitude to local wind and solar project

- 72% of those <1km from a RESS1 site felt positive or very positive towards known local solar projects
- 85% of respondents between 2km and 5km from a RESS1 site felt positive or very positive towards known local solar projects

What is your attitude to the solar farm(s) being planned or under development in your area, that is within 5kms of here? (n=226)
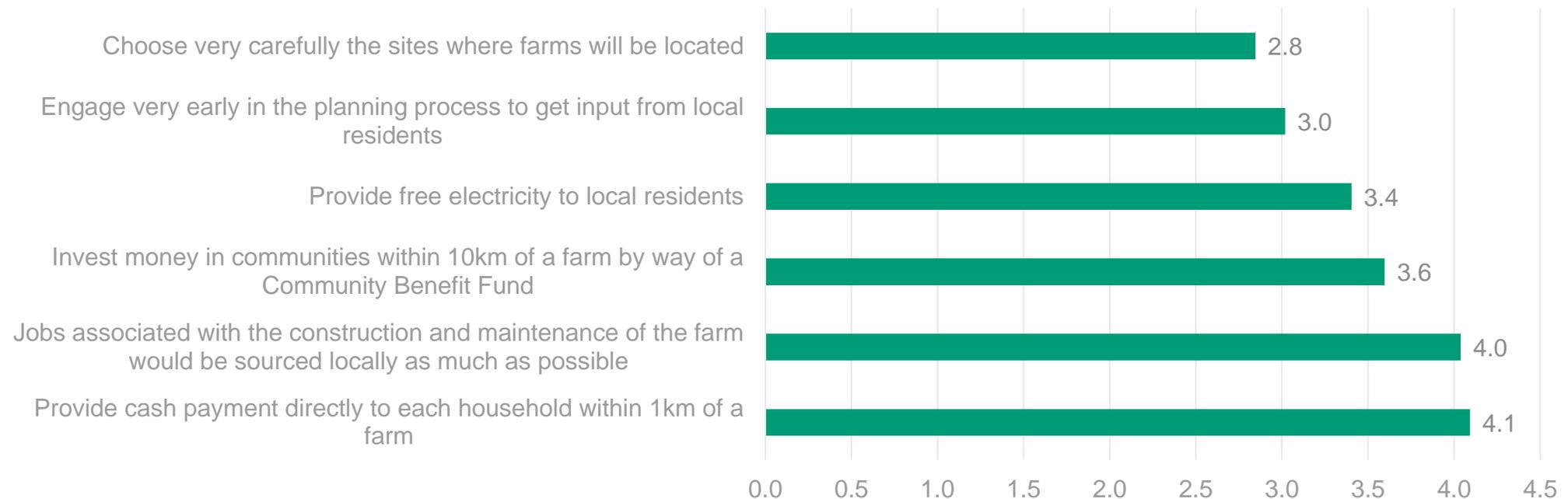
4.3 Results: Attitude to local wind and solar project

- 66% of those <1km from a RESS1 site (who did not know of a project under development) felt positive or very positive towards a *hypothetical* local solar project, a similar majority held regardless of distance to the RESS1 project

If a solar farm was to be developed within 5kms of here, what would be your attitude to this project?
(n=954)

Distance to RESS1 site	Very positive	Positive	Neutral	Negative	Very negative	Don't Know
Total	24	44	18	5	3	6
Control	22	46	18	4	3	7
2-5km	27	43	16	6	2	5
1-2km	24	44	20	5	4	3
0-1km	25	41	22	5	3	3

■ Very positive   ■ Positive   ■ Neutral   ■ Negative   ■ Very negative   ■ Don't Know
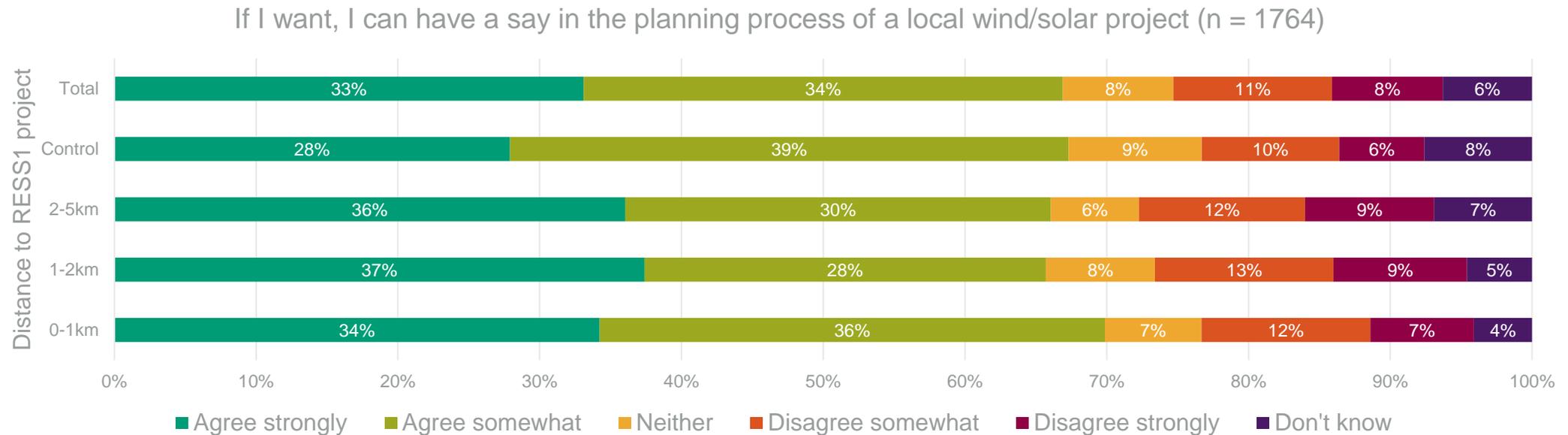
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4.3 Results: Engagement and the planning process

- We asked respondents to rank six statements on how to encourage communities to be more positive about wind/solar farms in their area from 1 (idea liked the most) to 6 (idea liked the least)
- On average, careful site location and early engagement with local residents appear most important for treatment and control groups
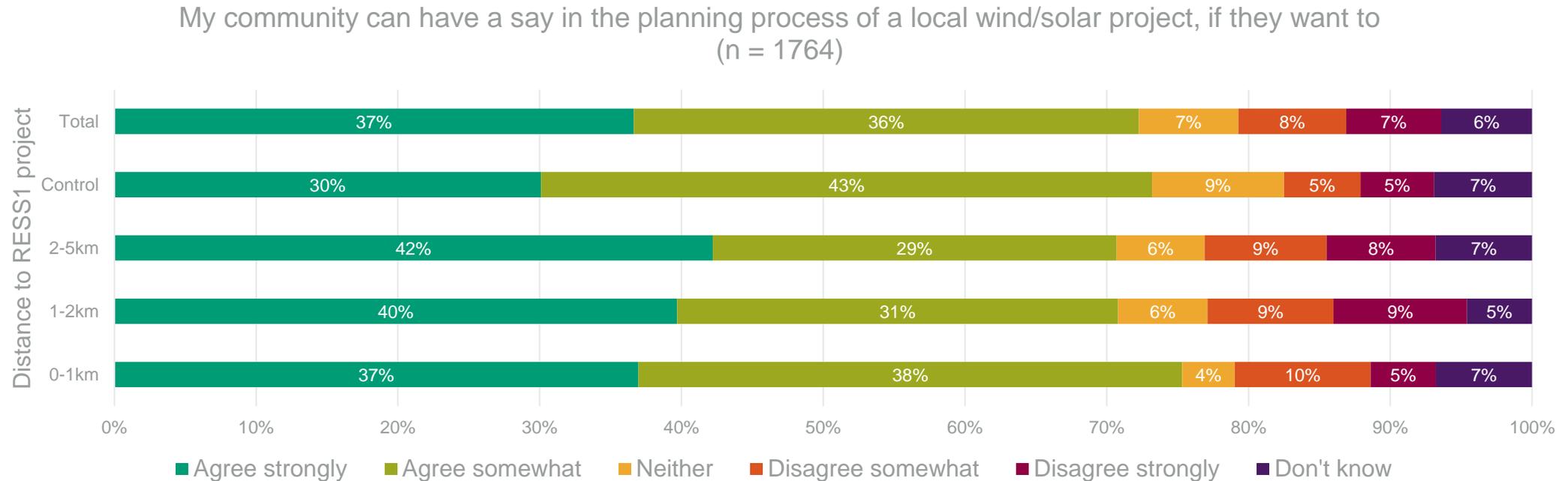

Choose very carefully the sites where farms will be located — 2.8
Engage very early in the planning process to get input from local residents — 3.0
Provide free electricity to local residents — 3.4
Invest money in communities within 10km of a farm by way of a Community Benefit Fund — 3.6
Jobs associated with the construction and maintenance of the farm would be sourced locally as much as possible — 4.0
Provide cash payment directly to each household within 1km of a farm — 4.1

4.3 Results: Engagement and the planning process

- Most respondents agree that they can have a say in the planning process, regardless of distance from a RESS1 project
- Between 19-22% of respondents within 5km of a RESS1 project do not think they have a say in the planning process.

If I want, I can have a say in the planning process of a local wind/solar project (n = 1764)

Distance to RESS1 project	Agree strongly	Agree somewhat	Neither	Disagree somewhat	Disagree strongly	Don't know
Total	33%	34%	8%	11%	8%	6%
Control	28%	39%	9%	10%	6%	8%
2-5km	36%	30%	6%	12%	9%	7%
1-2km	37%	28%	8%	13%	9%	5%
0-1km	34%	36%	7%	12%	7%	4%

■ Agree strongly ■ Agree somewhat ■ Neither ■ Disagree somewhat ■ Disagree strongly ■ Don't know
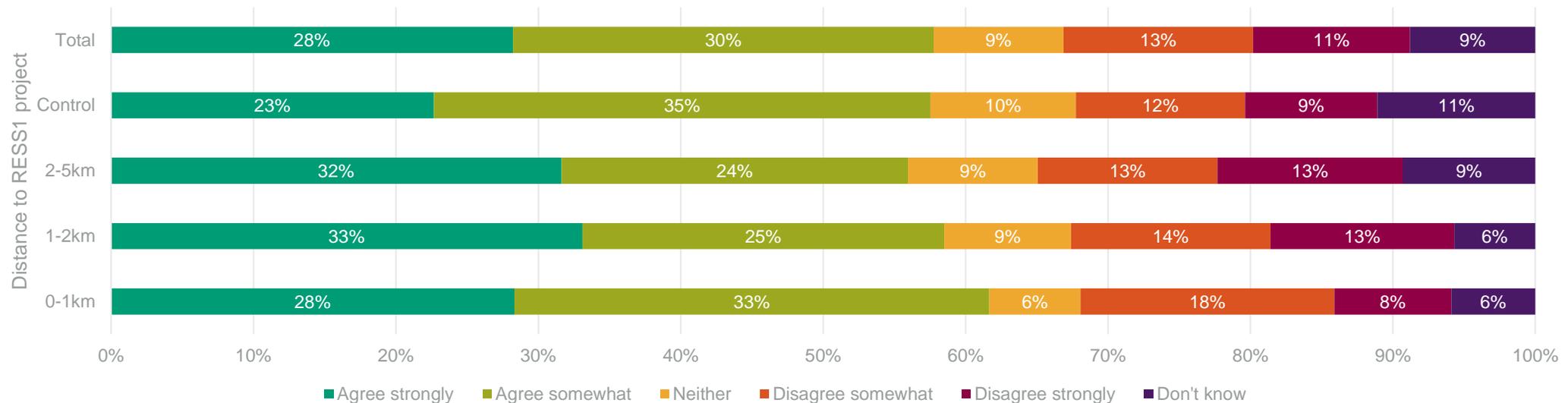
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4.3 Results: Engagement and community

- 71-75% of respondents near RESS1 installations agree that communities can have a say in the planning process; a similar majority holds for the control group

My community can have a say in the planning process of a local wind/solar project, if they want to
(n = 1764)

Distance to RESS1 project	Agree strongly	Agree somewhat	Neither	Disagree somewhat	Disagree strongly	Don't know
Total	37%	36%	7%	8%	7%	6%
Control	30%	43%	9%	5%	5%	7%
2-5km	42%	29%	6%	9%	8%	7%
1-2km	40%	31%	6%	9%	9%	5%
0-1km	37%	38%	4%	10%	5%	7%

4.3 Results: Engagement and community

- 56-61% of respondents near a RESS1 project feel that project developers and planning authorities take account of community opinions

- 26% of respondents near a RESS1 project do not think that project developers and planning authorities take account of community opinions
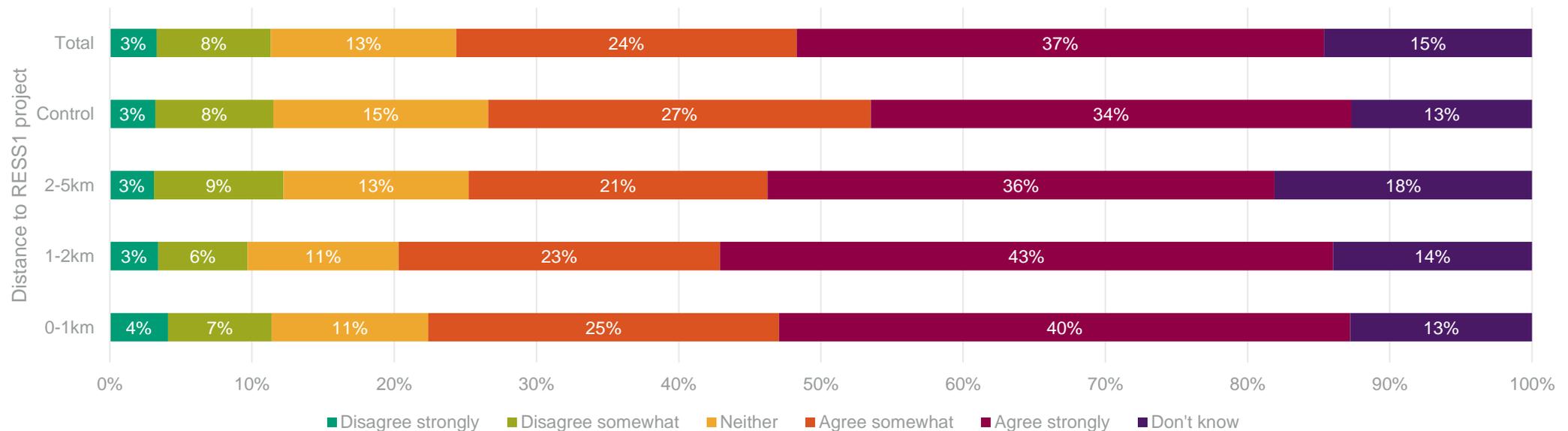
Project developers and the planning authorities take account of the opinions of communities close to wind/solar projects (n=1764)

Legend: Agree strongly · Agree somewhat · Neither · Disagree somewhat · Disagree strongly · Don't know

SUSTAINABLE ENERGY AUTHORITY OF IRELAND

4.1 Results: Engagement and the planning process

- However, most respondents do not think that the planning process in Ireland is fair and transparent, regardless of distance from a RESS1 project

The planning process in Ireland is not fair and transparent (n=1764)

Distance to RESS1 project	Disagree strongly	Disagree somewhat	Neither	Agree somewhat	Agree strongly	Don't know
Total	3%	8%	13%	24%	37%	15%
Control	3%	8%	15%	27%	34%	13%
2-5km	3%	9%	13%	21%	36%	18%
1-2km	3%	6%	11%	23%	43%	14%
0-1km	4%	7%	11%	25%	40%	13%

4.3 Results: Community benefits

- Attitudes towards community benefit funds are highly positive, especially among those closest to the project
- Even respondents who are not close to a RESS1 project (and not likely to be in the 'catchment area' for benefit funds) are mostly positive about community benefit funds.

What is your attitude to community benefit funds? (n = 1764)
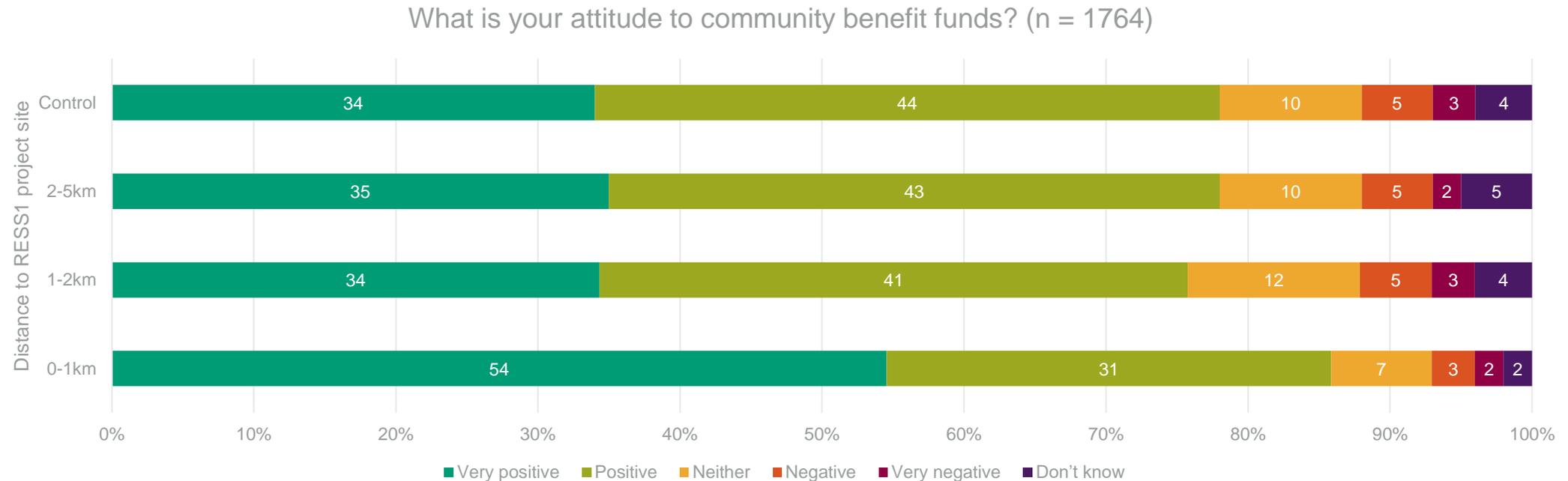
4.3 Results: Community benefits

- Most respondents believe that payment should either be higher or is about right, regardless of their distance from the RESS1 wind farm site
- Few respondents believe the payment should be less or is inappropriate

What is your attitude towards €1,000 per year cash payment to households within 1km of a new wind turbine? (n = 810)
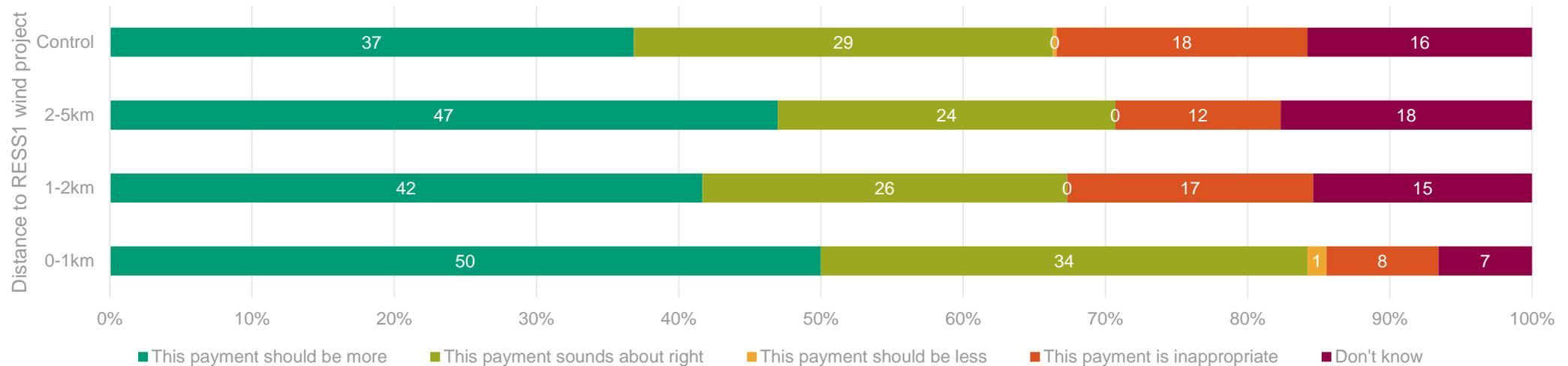
5. Conclusions and next steps

- This slide deck presented an extract of some of the high level, descriptive results of the national survey.

- The national survey gathered the 'pre-treatment' data for a difference in difference study to understand the effects of household payments and community benefit funds on the community acceptance of wind and solar PV energy in Ireland. The 'post-treatment' survey will be scheduled following sufficient time for RESS1 projects to disburse financial benefits to households and communities.

- The full survey instrument and dataset is available from SEAI on request and under certain conditions of use. We invite academic researchers with an interest in further analysis of the cross-sectional data to get in touch with us. Please contact John McCann (John.McCann@seai.ie) if you have any questions.

This work was commissioned by SEAI and completed by Indecon Economic Consultants and Ipsos MRBI with technical support from the MISTRAL-ITN programme