

Financing Community Energy dataset description

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1. Data aggregation: rationale and process

The Financing Community Energy Survey

The data presented here were gathered through a survey undertaken as part of the Financing Community Energy research project. This project was led by Professor Carly McLachlan of the Tyndall Centre for Climate Change Research, University of Manchester, and funded as part of the UKERC research programme. It involved researchers from the University of Manchester, University of Strathclyde, and Imperial College. The researchers involved with the survey were Carly McLachlan, Sarah Mander, Maria Sharmina, Ed Manderson and Tim Brauholtz-Speight (University of Manchester); Matthew Hannon (University of Strathclyde); and Jeff Hardy (Imperial College). Christina Birch and Christopher Walsh (University of Manchester) also provided some research assistance to the survey.

In the early stages of this research project, Community Energy England (CEE) and Community Energy Wales (CEW) launched their State of the Sector Survey 2017 (SOTS 2017), which addressed some of the same topics. The Financing Community Energy project signed a Memorandum of Understanding with CEE to share survey data where possible, to maximise the benefit from the two data collection exercises.

The survey questionnaire (which is provided separately) covered characteristics of community energy organisations, and of the projects they run. With regard to organisations, it included legal structure, annual turnover, numbers of paid staff and volunteers, and numbers of members. In relation to each project, topics included: energy activities (including electricity or heat generation, and energy efficiency); ownership (sole or partnership type); financing (details of each instrument type, value, terms etc.); resources employed (including sites, technical, financial and legal services, general administration); costs (operating and financing); revenues (values and sources); value propositions (a range of economic, social and environmental propositions); customers (types, rates paid, etc.); and other beneficiaries.

These categories were based on the Business Model Canvas approach to analysing business models, adjusted to take account of the project's particular interest in financing mechanisms, and the characteristics of the community energy sector as the project team understood it.

The format of some of the questions was designed to complement the SOTS 2017 to facilitate data sharing. Pre-set multiple choice formats were used as far as possible to facilitate data coding and quantitative analysis.

The survey sample was constructed with reference to the SOTS 2017 respondents list, data on community energy organisations in Scotland held by the social enterprise consultancy SCENE, and through internet searches, searching attendance lists at sector events, and through Local Energy Scotland sending a survey link to their members via their newsletter.

The survey received research ethics approval from the University of Manchester in October 2017. Informed consent was obtained in writing from all survey participants. The questionnaire was piloted in October – November 2017 with three community energy organisations. Only minor changes were made after the piloting process, and the pilot data forms part of the survey dataset analysed in this paper. The full survey was launched in November 2017 and closed in May 2018. During January and February 2018 it was suspended in England, Wales and Northern Ireland to avoid an overlap with the 2018 iteration of the SOTS.

The survey was available to complete online, or by telephone interview with the project team. Two methods of completing the survey were offered because the team were conscious that community energy is a heavily surveyed sector. Allowing research participants to choose the most convenient participation method ensured the survey achieved sufficient responses for a meaningful quantitative data analysis, while also reducing the administrative burden on research participants.

In total the researchers contacted 280 organisations, of which 83 responded and 48 completed the survey, providing data on 145 projects. Data were collected on an additional eight projects using published accounts and reports only, making a total of 153 individual project records.

Why aggregate data? Confidentiality and undertakings to survey participants

In making the data from our survey public, we have attempted to balance providing access to the data we have collected for other people interested in community energy, with preserving the confidentiality of the financial data that survey participants made available to us, and abiding by the undertakings we made to survey participants when they consented to provide data.

Data was gathered from community energy organisations on the understanding that “neither my name, nor the name of my organisation, will be linked with any specific data (e.g. financial details) in any public output from this research, without my express consent in writing”, and that “aggregated survey data will be made publicly available, in line with UK Research Council guidelines. Individual records will not be made public.”

Therefore, we have aggregated the individual project records into multi-project records. This process is explained next.

Aggregation process

Data from the 153 individual project records in the master database were aggregated into 23 multi-project records. A minimum of three projects were included in each multi-project record, to enhance project anonymity. The 17 non-operational or stalled projects, on which there was only limited data, were removed. The remaining individual projects were aggregated on the following basis, to attempt to keep similar projects together and generate useful and coherent multi-project records.

Firstly, projects were sorted by core activity: electricity generation; heat generation; non-generation activities.

Then secondly:

within electricity generation, projects were aggregated by generation technology (hydro, wind, solar ground mount, rooftop solar); and within technologies, by size of generation capacity (size bands vary depending on the technology and are given in the dataset).

within non-generation activities, projects were aggregated into two records, one of projects that financed themselves at least partly through customer revenues, and one of entirely grant-funded projects.

All heat generation projects in the dataset were aggregated into a single multi-project record, as there were just five such operational projects within the dataset.

Within records, individual fields were aggregated in various ways depending on the characteristics of the data. The table below explains how data within each field was aggregated.

2. Description of dataset and key to data codes

Data format is ASCII text CSV (comma separated variables). All fields are text and in quotes. Be aware that if you save the file, even as CSV, in Excel then quotes around fields will likely be partly deleted making the file difficult to read in any other software.

Data Field	Data type and units	Explanation and clarification	Key to data codes (if applicable)
Record iD	Text (a number)	Identification number for this multi-project record.	
Number of projects in this aggregated record	Text (a number)	Number of individual project records aggregated to form this multi-project record.	
<p>Data about the organisations running the projects</p> <p>Data in these fields refer to the organisations running the projects. Note that some organisations run multiple projects. Where an organisation has more than one project in an aggregated record, its data (e.g. number of members) has only been counted once. However, some organisations feature in more than one aggregated record. Therefore, while there has been no double counting of organisational data <i>within</i> aggregated records, there will be double counting of organisational data across the whole dataset. This means that using this dataset to produce totals at the organisation level, e.g. membership figures for the community energy organisations in the dataset, will produce misleading results.</p>			
Range of charitable statuses of organisations	Text (a code or list of codes)	Answers to the question 'does the organisation have charitable status?' Some organisations were trading subsidiaries of charities, and are recorded as code 2.	1. = Yes (i.e. it has charitable status); 2. = No - but it is linked to a charity; 3. = No; 4. = Other . indicates no data were given.
Range of legal structures used by organisations	Text (a code or list of codes)		1. = Community Benefit Society (Becom) / Registered Society; 2. = Co-operative; 3. = Community Interest Company; 4. = Company Ltd By Guarantee; 5. = Charitable Incorporated Organisation / SCIO; 6. = Other.
Other legal status - please specify	Text	Where the legal structure was 'other', this field shows participants' descriptions of the legal status of their organisation	. indicates no data were given.
Organisation FTEs employed	Text (a number)	Number of full-time equivalent paid employees.	
FTEs employed by	Text (number of FTEs)	Number of people employed to work on the	. indicates no data were given.

parent body/ contracted out	or . to indicate no data were given)	project by related organisations e.g. if the administration of the project is contracted out to another company.	
Current number of volunteers	Text (a code or list of codes)		1. = <10; 2. = 10-19; 3. = 20-29; 4. = 30-49; 5. = 50-99.
Total average volunteer hours per week	Text (number of hours or . to indicate no data were given)	Participants were asked to estimate how many hours volunteers spent working for the organisation per week. This is the sum of all these hours for the organisations in the record.	. indicates no data were given.
Total members of organisations in this record	Text (a number)	Sum of all the members of the organisations in the record.	
General data about the projects			
Project activity types	Text (a code or list of codes)		1. = Electricity generation; 2. = Heat generation; 3. = Transport; 4. = Energy storage; 5. = Energy efficiency/demand management; 6. = Other.
Total years from project start to commissioning	Text (number of years or n/a if not applicable)	Applies to energy generation projects only. Null for other projects. Participants were asked for a start or inception date for the project, and for the date when it began generating energy.	
Range of years for project data	Text (year range or . to indicate no data were given)	The range of years for which projects in the record are reporting data (e.g. one project reporting for 2015-16 and one project reporting for 2016-17 would be recorded as 2015-17).	. indicates no data were given.
Project was organisation's first or not?	Text (a code or list of codes)		1. = Yes - first of any sort; 2. = First of this activity type (electricity generation, heat generation, etc.) - but we have other projects already; 3. = First of this specific sort (e.g. solar PV, LED lighting etc.) - but we have other projects in this activity area (e.g. generation, energy efficiency) already; 4. = No - we have established similar projects already.

Organisation has multiple projects or sites?	Text (a code or list of codes)		1. = yes; 0. = no.
Energy generation data			
Number of sites in record	Text (number of sites or n/a if not applicable)	Total number of energy generating sites across all the projects in the record.	
Site technology	Text (a code or list of codes or n/a if not applicable)		1. = Hydro; 2. = Wind; 3. = Solar PV - ground-mount; 4. = Solar PV - rooftop; 5. = Biomass; 6. = Heat pump; 7. = Solar thermal.
Total generation capacity (kW)	Text (generation capacity in kW or n/a if not applicable)	Sum of the generation capacity of each generating site in the record.	
Project capacity band (kW)	Text (capacity range in kW or n/a if not applicable)	Range of generating capacities of the sites in the record.	
Total energy generation (kWh)	Text (energy generation in kWh or n/a if not applicable)	Sum of all the energy generated by the sites in the record. Participants provided total generation over several years where possible.	
Total number of months covered by generation total	Text (number of months or n/a if not applicable)	Number of months of energy generation included in the previous total.	
Generation sites notes	Text	Summary of any comments on site operation made by survey participants.	n/a indicates not applicable, and . indicates no data were given though the question was applicable
Non-generation projects			
Non-generation projects - activity type(s)	Text (a code or list of codes or n/a if not applicable)		1. = battery storage; 2. = energy efficient lighting; 3. = energy advice; 4. = energy efficiency - multi activity including installing tech; 5. = other.
Non-generation	Text	Summary of further details from text or	n/a indicates not applicable

projects - further details		interviews with participants.	
Ownership data			
Project ownership type	Text (a code or list of codes)		1. = Community owned 100%; 2. = Community - public partnership; 3. = Community - commercial partnership; 4. = Community-third sector partnership; 5. = Company-client arrangement; 6. = other.
Partnership type	Text (a code or list of codes or n/a if not applicable)		1. = Joint venture; 2. = Split ownership; 3. = Shared revenue; 4. = Other.
Ownership/partnership further info	Text	Summary of any further information from participants.	n/a indicates not applicable, and . indicates no data were given though the question was applicable
Finance data			
Grants - number	Text (a number)	Total number of grants reported by projects in the record.	
Grants - total value	Text (a number in pounds)	Sum of the value of all the grants reported by projects in the record.	
Grants – source types	Text (a code or list of codes)	List of all sources of the grant finance reported by projects in the record, i.e. what type of institution gave the grant. The same source type codes are used for all financial instruments in the dataset.	1. = UK government; 2. = Devolved government; 3. = Local government; 4. = Other public sector; 5. = specialist finance sector (e.g. Triodos); 6. = other finance sector; 7. = other private sector; 8. = customer; 9. = charity/third sector; 10. = other community energy; 11. = other community; 12. = C Shares - used online investment platform (e.g. Ethex, Microgenius); 13. = C Shares - didn't use online investment platform; 14. = Lottery; 15. = EU; 16. = public/community; 17. = directors; 18. = parent company; 19. = own funds; 20. = C Shares – used specialist national-level marketing (e.g. Energy4All).
Loans - number	Text (a number)	Total number of loans reported by projects in the	

		record.	
Loans - total value	Text (a number in pounds)	Sum of the value of all the loans reported by projects in the record.	
Loans - source types	Text (a code or list of codes or n/a if not applicable)	Sources of the loan finance reported by projects in the record, i.e. what type of institution made the loan. The same source type codes are used for all financial instruments in the dataset.	See codes for 'Grants – source types' above.
Loans - weighted mean interest rates	Text (percentage number or . to indicate no data were given or n/a if not applicable)	Mean interest rate of all the loans in the record, weighted by size of loan: so the interest rates on larger loans will count more towards the average than the interest rates on smaller loans. Number rounded to two decimal places.	
Loans - weighted mean duration (months)	Text (number of months, description, or . to indicate no data were given, or n/a if not applicable)	Mean duration of all the loans in the record i.e. over how many months is the loan scheduled to be repaid. The mean is weighted by size of the loan: so the duration of larger loans will count more towards the average than the duration of smaller loans. Number rounded to nearest month.	
Community share issues - number	Text (a number)	Total number of community share issues reported by projects in the record.	
Community shares - total value	Text (a number in pounds)	Sum of the value of all the community share issues reported by projects in the record.	
Community shares - source types	Text (a code or list of codes or . to indicate no data were given, or n/a if not applicable)	How the community share funds were raised.	12. = C Shares - used online investment platform (e.g. Ethex, Microgenius); 13. = C Shares - didn't use online investment platform; 20. = C Shares – used specialist national-level marketing (e.g. Energy4All).
Community shares - weighted mean	Text (Percentage, text description, or	Mean interest rate of all the community share issues in the record, weighted by size of loan: so	

interest rates	n/a if not applicable)	the interest rates offered on larger issues will count more towards the average than the interest rates offered on smaller issues. Number rounded to two decimal places.	
Community shares - weighted mean duration	Text (number of months or n/a if not applicable)	Mean duration of all the community share issues in the record i.e. over how many months is interest scheduled to be paid. Typically this is 240 months i.e. 20 years. The mean is weighted by size of the community share issue: so the duration of larger issues will count more towards the average than the duration of smaller issues. Number rounded to nearest month.	
Other instruments - number	Text (a number)	Total number of other financial instruments – e.g. bond issues, other forms of crowdfunding - reported by projects in the record.	
Other instruments - total value	Text (Total value in pounds or n/a if not applicable)	Sum of the value of all the other financial instruments reported by projects in the record.	
Other instruments - type	Text (a code or list of codes or n/a if not applicable)	List of types of financial instrument. Note that types 1-4 and 6 are already covered in the 'Grants', 'Loans', 'Community Shares' and 'Own Funds' sections of the dataset.	(1. = Grant; 2. = Loan; 3. = Community Shares; 4. = Own funds.) 5. = Donation; 6. = Community shares -rights issue; 7. = Membership fees; 8. = Partner shares; 9. = Bond or debenture; 10. = other crowdfunding; 11. = other.
Other instruments - interest rates	Text (Percentage, or n/a if not applicable)	Mean interest rate of all the other financial instruments in the record, weighted by size of instrument: so the interest rates on larger instruments will count more towards the average than the interest rates on smaller instruments. Number rounded to two decimal places.	
Other instruments - durations	Text (number of months or n/a if not	Mean duration of all the other financial instruments in the record i.e. over how many	

	applicable)	months is the finance scheduled to be repaid (if at all). The mean is weighted by size of the instrument: so the duration of larger instruments will count more towards the average than the duration of smaller instruments. Number rounded to nearest month.	
Number of projects that used 'own funds'	Text (number or . to indicate no data were given)	Number of projects in the record that used the organisation's pre-existing funds.	
Finance tax reliefs types	Text (a code or list of codes or . to indicate no data were given, or n/a if not applicable)	Tax reliefs offered to purchasers of community shares.	1. = EIS; 2. = SEIS; 3. = EIS and SEIS; 4. = SITR; 5. = no tax relief used.
Costs data			
Capex	Text (a number in pounds)	Total of all the capital expenditure reported by projects in the record. Rounded to nearest whole pound.	
Opex amount	Text (a number in pounds)	Total of all the annual operating expenditure reported by projects in the record. This includes staff costs, maintenance costs, insurance costs, etc. Total for one year per project only. Rounded to nearest whole pound.	
Finex amount	Text (a number in pounds)	Total of all the annual financing expenditure reported by projects in the record. This includes loan repayments, community share interest payments, etc. Total for one year per project only. Rounded to nearest whole pound.	
Resources data			
Resources - site	Text (a code or list of codes or n/a if not	On what basis the project accessed a site for its generation technology	1. = for free; 2. = at discounted rates; 3. = at commercial rates; 4. = mix of free and discount; 5. =

	applicable)		mix of free and commercial; 6. = mix of discount and commercial; 7. = mix of all three categories; 8. = other; 9. = none used.
Resources -tech and eng	Text (a code or list of codes)	On what basis the project accessed technical and engineering services	See 'Resources – site' above
Resources - financials	Text (a code or list of codes)	On what basis the project accessed financial services	See 'Resources – site' above
Resources - legals	Text (a code or list of codes)	On what basis the project accessed legal services	See 'Resources – site' above
Resources - gen admin	Text (a code or list of codes)	On what basis the project accessed general administrative services	See 'Resources – site' above
Notes to resources categories	Text	Summary of further notes and clarifications about project resources from survey participants	. indicates no data were given
Local or in-kind resources - notes	Text	Summary of any comments from survey participants about the use of local resources, or of 'in-kind' donations of services or resources to the project	. indicates no data were given
Volunteer hours - total reported	Text (number, or description or . to indicate no data were given)	Total of any estimates of volunteer hours spent working on the projects in the record. Note that often projects did not have a figure for this.	
Support organisations - all named by any project in the record	Text (list)	List of all organisations named by survey participants as having been consulted or contracted with in connection with the projects in the record. Questionnaire provided a list with option to add further names in an 'other' box.	
Revenues data			
Revenue annual energy generation	Text (number in pounds or n/a if not applicable)	Total of all the revenue from energy generation reported for projects in the record. Total for one year per project only. Rounded to nearest whole	

		pound.	
Revenue annual bills saving	Text (a number in pounds)	Total of any revenue from saving on organisation's own energy expenditure for projects in the record. Total for one year per project only. Rounded to nearest whole pound.	
Revenue annual other	Text (a number in pounds)	Total of any other revenue reported for projects in the record. Total for one year per project only. Rounded to nearest whole pound.	
Price scheme type	Text (a code or list of codes or n/a if not applicable)	The price scheme(s) the project registered for e.g. Feed-in Tariff scheme.	1. = Feed-in Tariff scheme (FITs); 2. = Renewables Obligation or Northern Ireland Renewables Obligation (RO or NIRO); 3. = Renewable Heat Incentive (RHI); 4. = FITS and RHI; 5. = none; 6. = FITS and other.
Range of price scheme rates (p/kWh, low to high)	Text (number range in pence per kWh or n/a if not applicable)	The range of price scheme rates, in pence per kWh of generation, reported by projects in the record. Field gives lowest and highest rates obtained.	
Range (low to high) of price scheme export rates (FITs) / REGO (RO) / RHI tier 2	Text (number range in pence per kWh or n/a if not applicable)	For those projects registered for a price scheme with a specific 'export' rate, this field gives the range of price scheme rates, in pence per kWh of generation, reported by projects in the record. Field gives lowest and highest rates obtained.	
Price scheme annual revenue	Text (number in pounds or n/a if not applicable)	Total of all revenue reported as specifically received through the price scheme by projects in the record. Total for one year per project only. Rounded to nearest whole pound.	
Revenue and price notes	Text	Summary of any further comments about price scheme revenues for projects in the record by survey participants. Note that REGO = Renewable Energy Guarantees of Origin.	n/a indicates not applicable, and . indicates no data were given though the question was applicable
Customers data			
Number of projects	Text (number n/a if	Total number of projects reporting that they	

providing free electricity to any users	not applicable)	provided electricity for free to any user.	
Number of projects with customers	Text (a number)	Total number of projects reporting any paying customers.	
Customer type(s)	Text (a code or list of codes or n/a if not applicable)		1. = energy company; 2. = other company; 3. = community or third sector; 4. = public sector; 5. = individuals.
Customer rate (p per kWh)	Text (number range in pence per kWh, or . to indicate no data were given, or n/a if not applicable)	Range of prices per kWh that projects charged customers for energy. Field gives lowest and highest price reported by projects in the record.	
Customer annual revenue	Text (number in pounds or n/a if not applicable)	Total of all revenue from customers reported by projects in the record. Total for one year per project only. Rounded to nearest whole pound.	
Customer channels (how supplied with energy; or how other service supplied)	Text (a code or list of codes or . to indicate no data were given, or n/a if not applicable)	List of all the methods reported by projects in the record to get their goods or services to customers: either how generated energy was supplied, or how other services were provided. Codes 1 – 3 tend to refer to energy generation, codes 4 – 6 to other services.	1. = behind the meter; 2. = private wire or local network; 3. = via the grid; 4. = in their homes; 5. = in their premises; 6. = other face to face.
Customer recruitment	Text (a code or list of codes or . to indicate no data were given, or n/a if not applicable)	List of ways in which projects found customers, as reported by survey participants. More than one answer possible per project.	1. = personal connection or word of mouth; 2. = via project supplier or partner; 3. = via another community energy/environmental group; 4. = at community events; 5. = social media; 6. = went to market' to find customer; 7. = advertising; 8. = word of mouth, events and advertising; 9. = already customer for another project; 10. = many recruitment channels; 11. = other.
Customer value propositions	Text (a code or list of codes or . to indicate	List of value propositions offered to the customer by projects in the record; what survey	1. = Electricity – origin irrelevant; 2. = Low carbon/renewable electricity; 3. = Reduce energy bills;

	no data were given, or n/a if not applicable)	participants believe motivated customers to pay for the projects' services.	4. = Reduce CO2 emissions; 5. = To bring community together; 6. = To deal with known, trusted organisation; 7. = To benefit local economy; 8. = For community benefit; 9. = To provide educational benefits; 10. = Tackle climate change; 11. = Enabling customer to meet planning requirements; 12. = Enhances customer reputation; 13. = other.
Customer relationship	Text (a code or list of codes or n/a if not applicable)	List of ways in which projects in the record report communicating with customers.	1. = ongoing but mainly via IT; 2. = ongoing and also face-to-face; 3. = face-to-face, mix of one-off and ongoing.
Community benefits data - any reports on benefits, beneficiaries, and spending			
Beneficiary activities - any reported	Text	List of services provided by the project for free to anyone ('beneficiaries'), reported by survey participants. 'Panel hosts' or 'technology hosts' refers to any organisation or individual on whose premises the project has installed technology. For example, a community centre on whose roof the project has installed solar panels.	n/a indicates not applicable, and . indicates no data were given though the question was applicable
Beneficiary activities - any reports of who benefits	Text	List of types of people or organisations reported to be benefitting from free services from the projects in the record.	n/a indicates not applicable, and . indicates no data were given though the question was applicable
Beneficiary value propositions	Text	List of value propositions offered for free to beneficiaries by projects in the record.	n/a indicates not applicable, and . indicates no data were given though the question was applicable
Beneficiaries funding	Text	Did the project receive any specific funding for this work with beneficiaries? Yes or no answer.	n/a indicates not applicable, and . indicates no data were given though the question was applicable
Value measurement	Text	Indicates whether or not the project attempted to measure the value of its activities to its customers and/or beneficiaries in any way.	n/a indicates not applicable, and . indicates no data were given though the question was applicable
Community benefit funds total annual spend	Text (number in pounds or . to indicate no data	Total value of any spending on other community benefits (e.g. grants to local organisations) reported for the projects in the record.	

	were given, or n/a if not applicable)		
Community benefit funds - any future expectations	Text (a code or list of codes or . to indicate no data were given, or n/a if not applicable)	List of expectations of survey participants in relation to future community benefit spending from the projects in the record	1 = decrease; 2 = stay about the same; 3 = increase.
All wider benefits reported from projects	Text	List of all categories of community benefits for projects in the record reported by survey participants.	n/a indicates not applicable, and . indicates no data were given though the question was applicable