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SONNET – SOCIAL INNOVATION IN ENERGY TRANSITIONS

Co-creating a rich understanding of the diversity, processes, contributions, success and future potentials of social innovation in the energy sector

D3.2: Report on the findings on the diversity, processes and contributions of SIE-fields and their SIE-initiatives in six countries

Deep dives into social innovation in energy through investigating three SIE-fields and their SIE-initiatives in the United Kingdom (UK)

Project Coordinator: Fraunhofer ISI

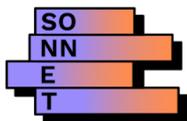
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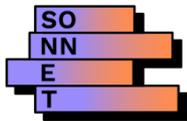
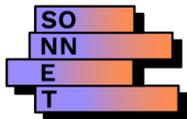


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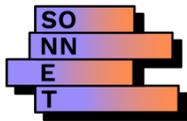


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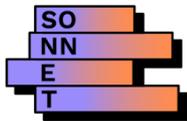


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1 BACKGROUND

1.1 Short introduction into the country report

SONNET (Social Innovation in Energy Transitions) brings diverse groups together to make sense of how social innovation can bring about a more sustainable energy sector in Europe. The project aims to co-create a rich understanding of the diversity, processes, contributions, successes and future potentials of social innovation in the energy sector (SIE). We define SIE as a combination of ideas, objects and/or actions that change social relations and involve new ways of doing, thinking and/or organising energy. For example, organising under cooperative principles to generate renewable energy.

As part of the WP3 case study work, we have produced 18 embedded case studies of SIE-fields across all six SONNET countries (including 36 cases of SIE-initiatives nested within them). This report outlines the case study work conducted in the UK. It contains the following sections:

Section 1 provides some reminders of the concepts and research questions. Section 2 introduces the SIE-fields investigated in the UK. Section 3 outlines the UK energy sector, in particular, the national energy system, the governance of the energy system, major energy policy changes, and social and cultural changes linked to the energy sector. Section 4 details the methodology of the UK work, including reflections on researchers' relations to the case. Section 5 contains a summary of each SIE-field studied in the UK through answering the major and minor research questions that have guided the empirical work. A list of references can be found in section 6. The three case study reports about the emergence and development of SIE-fields in the UK can be found in the appendix.

The country report builds on the previous SONNET work as outlined in deliverable 1.1, 1.2 and 3.1. It should therefore be read in combination with these deliverables. For example, the conceptual work is only briefly introduced in this report. For more detailed information, the reader should turn to D1.2 and 3.1.

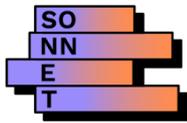
1.2 A brief reminder of concepts and research questions

This section introduces three intertwined (and also distinct) empirical foci that have been investigated in WP3 (including definitions of key concepts and a visual conceptual map). The foci are: 1) emergence, development and institutionalisation of SIE and SIE-field over time, 2) SIE-field-actors and other field-actors' interactions with the 'outside' institutional environment, and 3) enabling and impeding factors for SIE-field-actors and other field-actors to conduct institutional work. The following three major research linked to these foci are:

- ▲ How do SIEs and SIE-fields emerge, develop and institutionalise over time?
- ▲ How do SIE-field-actors and other field-actors interact with the 'outside' institutional environment and thereby co-shape the SIE-field over time?
- ▲ What are the enabling and impeding factors for SIE-field-actors and other field-actors to conduct institutional work and change the 'outside' institutional environment?

For more detail on this work see D1.2 and D3.1.

In the following sub-sections, we introduce each of the three parts with short empirical narratives, conceptual working definitions, and a brief characterisation of the key aspects of the SIE-field that we investigate in our case studies.



1.2.1 Emergence, development and institutionalisation of SIE and SIE-field over time

Diverse SIE initiatives (and other SIE-field-actors) work on SIE and interact with other field-actors (who enable and/or impede the same SIE) within an SIE-field over time. SIE-field-actors (who work on SIE) and other field-actors (who enable and/or impede SIE) are actors within the SIE-field. These actors take one another and their activities into account and have a shared (but not necessarily consensual) understanding of an SIE and of their relationship to one another. Over time, SIE-field-actors' and other field-actors' patterns of activities can become more and more held in place, and practically taken for granted within an SIE-field. Actors can start to recognise (but not necessarily follow) shared norms, beliefs and rules.

The main focus in this part is on the emergence and development of SIE within an SIE-field as well as the development of SIE-initiatives, SIE-field-actors and other field-actors. We want to empirically identify how actors manifest around specific SIE and develop collectives (e.g. informal and formal alliances/networks/collaborations) and shared (but not necessarily consensual) narratives and activities (and associated norms, beliefs and values) over time. We are also interested in understanding what is 'socially innovative', by specifying the ideas, objects and actions these actors and collectives are working on within an SIE-field, and how these demonstrate a change in social relations and new ways of doing, organising and thinking.

Social innovation in the energy sector (SIE) is a combination of ideas, objects and/or actions that change social relations and involve new ways of doing, thinking and/or organising energy. An example: Organising under cooperative principles to generate renewable energy.

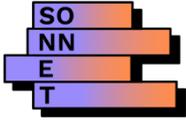
SIE-initiative is a localised version/manifestation in time and space of a SIE. It includes SIE-field-actors, as those actors working on SIE. They can be from every sphere of society (community, market, state, third sector = SIE as multi-actor phenomena). Examples are: Ecovillage Aardehuizen and Living Lab Walldorf.

SIE-field-actors are individuals, organisations or other collectives who are part of a certain SIE-field and actively work on SIE. They can be from every sphere of society (community, market, state, third sector = SIE as multi-actor phenomena). Examples are: Cooperatives, citizen initiatives, energy companies, start-ups, local governments, intermediaries and NGOs.

Other field-actors are individuals, organisations or other collectives who are part of a certain SIE-field – these can enable and/or impede SIE. They can be from every sphere of society (community, market, state, third sector). Examples are: Local governments, national governments, professional organisations, industry actors and citizens.

A SIE-field is an arena/space that includes a specific SIE as well as SIE-field-actors working on it and other field-actors enabling and/or impeding it. In this space these actors take one another and their actions into account and have a shared (but not necessarily consensual) understanding of a SIE and of their relationship to other actors. They recognise (but not necessarily follow) shared norms, beliefs and rules. SIE-fields are often not homogenous but are composed of actors with diverse and contradictory aims and interests. An example: The UK cooperative energy field includes SIE-initiatives and SIE-field-actors (e.g. Brighton Energy Co-op, Cooperative UK, Community Energy England, UK Government, City of Brighton), who have a shared understanding of an SIE, which exists as 'organising under cooperative principles to generate renewable energy'.

Institutionalisation is a process by which a pattern of activities comes to be regulative, normatively and cultural-cognitively held in place, and practically taken for granted within a SIE-field. The degree of institutionalisation is linked to the emergence and stability of a SIE-field.



1.2.2 SIE-field-actors and other field-actors' interactions with the 'outside' institutional environment

The SIE-field (and its actors) are nested within an 'outside' institutional environment linked to an energy system. This environment is constituted by formal and informal institutions that shape the activities of SIE-field-actors and other field-actors within the SIE-field. Although energy systems consist of a wide range of institutionalised rules, norms, and beliefs, these institutions have been object to profound changes over the past decade. These changes are due to manifold developments and can be grounded in field events and contestations, inter-field interactions, external shocks and societal trends.

The main focus is on the interactions of SIE, SIE-field-actors and other field-actors with the 'outside' institutional environment, thereby co-shaping the SIE and its SIE-field and potentially creating institutional changes or maintaining the existing environment. We are interested in the 'outside' institutional environment that 'surrounds' and 'penetrates' the SIE-field. We want to understand how dominant institutions (regulative, normative and cultural-cognitive elements) within the 'outside' institutional environment influence the emergence and development of SIE (i.e. their social relations and patterns of doing, organising and thinking) within an SIE-field.

To understand how SIE-field-actors and other field-actors interact with the 'outside' institutional environment, we also need to identify and examine field events and contestations, inter-field interactions of SIE-fields and external shocks and societal trends. We are interested in how these events, contestations, relations, shocks and trends influence SIE-field developments and 'outside' institutional environments, as they co-shape each other over time. A particular focus is on political and policy developments.

Formal and informal institutions constitute the institutional environment. The SIE-field itself constitutes an environment (= SIE-field institutional environment) but also is nested with the larger encompassing institutional environment (= outside institutional environment). The SIE-field and its institutional environment consist of institutions and actors who interact with each other. The 'outside' institutional environment consists of institutions that can 'penetrate' (i.e. shape/ influence/ interact with) the SIE-field.

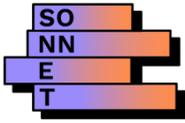
Institutional change is any change in form, quality or state in an institution or arrangement of institutional elements.

Institutions are made up of regulative, normative and cultural-cognitive elements. They are tacitly or explicitly agreed upon rules constraining or enabling activities of actors that provide stability and meaning to social life. These can be: 1) Regulative institutions: laws, rules, standards, policies, 2) Normative institutions: norms and value systems, and 3) Cultural-cognitive institutions: shared conceptions of reality, binding expectations, common beliefs.

Field events are events, which might influence actors' relations and interactions within the SIE-field and can 'unsettle' the existing 'outside' institutional environment (but not necessarily change it). An example: A community energy advocacy group that was set up at a conference and started to talk to policy makers about their activities.

Field contestations are debates among SIE-field-actors and/ or other field-actors over SIE-field structures and processes. These contestations can 'unsettle' the existing 'outside' institutional environment (but not necessarily change it). An example: Contestations over regulatory and industrial policy linked to energy infrastructure developments.

Inter-field relations are interactions between SIE-fields (they can be nested and/ or overlapping). An example: Cooperative energy is nested within community energy in the UK.



External shocks and societal trends are, for instance, climate change, national elections, capitalism, ageing population, and economic crises that influence SIE-fields structures. Examples: Economic crises, weather disasters, and pandemics.

1.2.3 Enabling and impeding factors for SIE-field-actors and other field-actors to conduct institutional work

SIE-initiatives, other SIE-field-actors, and other field-actors perform institutional work. This means they engage in creating, maintaining and transforming institutions to be able to work on, enable and/ or impede SIE developments. Not all of the actors might be able to conduct this work (e.g. depending on skills, capacities, intentions and resources). There might be factors that can support or hinder institutional work. Some of the work conducted might have intentional or unintentional effects. Institutional changes can occur if the work and its activities appear to be more and more legitimate over time while previously institutionalised practices become eroded.

The main focus is on studying the practices of institutional work conducted by SIE-field-actors and other field-actors, in particular, aiming to understand the factors that allow (or not) for these activities to be performed. We examine why, how, when and where actors work at creating, maintaining and transforming institutions. This then enables us to build an understanding of the different forms of institutional work, types of work conducted (boundary work, strategy work, etc.), actors who are engaged (or not) in this work, and enabling and impeding factors to be able to conduct this work.

Drawing attention to the practices rather than purely accomplishments of institutional work allow for an investigation of intended effects but also unintended consequences, i.e. success as well as failure, winners and losers, and acts of resistance and transformation. This then enables us to study how SIE-field-actors and other field-actors potentially contribute to institutional changes and/or maintain existing 'outside' institutional environments.

Institutional work refers to the activities of SIE-field-actors and other field-actors that aim to create, maintain and transform institutions. Examples: 1) Attempts to influence policy makers and the general public through direct lobbying, research reports, positioning papers, advertising, and the setting of technical standards and 2) Attempts to influence informal institutions, such as values, norms, binding expectations, common beliefs, habits, and routines, among the wider public (Arenas 2017).

These foci are visualised in Figure 1 below (black = 'outside' institutional environment; blue = SIE-field and its SIE and actors; orange = change/ maintain processes).

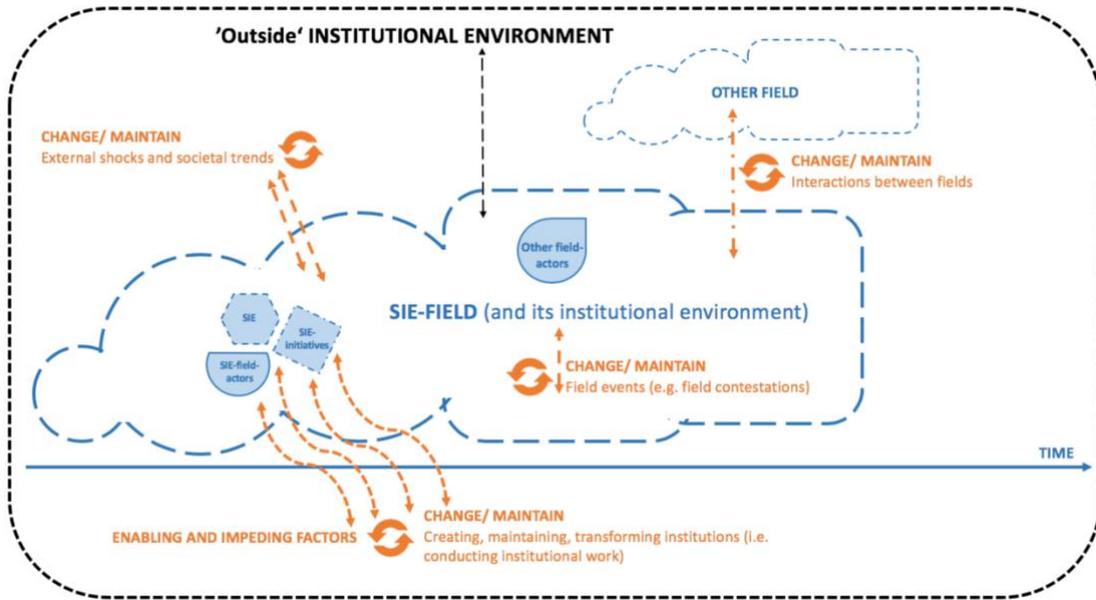
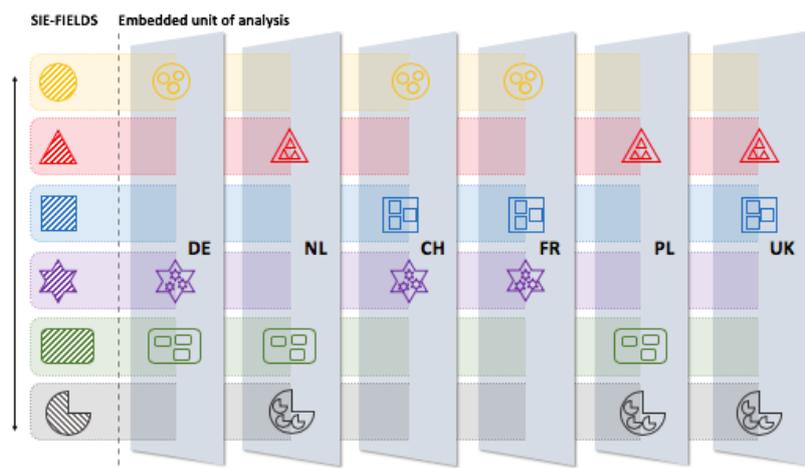
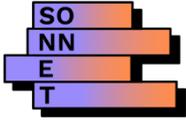


Figure 1: Summary of overall visual conceptual map

1.3 Embedded, multiple case study approach

In SONNET, we have identified eighteen clustered SIEs that together with SIE-field-actors and other field-actors make up the SIE-fields (for more detail see D1.1 and D1.2). To be able to study the SIE-fields in-depth and compare them, we have first delineated the national context as an important factor in the development and emergence of SIE and have included a diverse mix of country contexts (FR, DE, CH, PL, UK, BE/NL). We then developed a SIE-typology (see deliverable D1.1) and identified SIE clusters (see deliverable D1.2) and selected six SIE-fields for further investigation. The selection of SIE-fields was grounded in a purposive sample including the following selection criteria: 1) recognisability and prevalence of SIE-fields in each national context (i.e. SIE-fields had to be empirically recognisable in each SONNET country); 2) full coverage of interactions and manifestations that have been identified for the SIE-typology in WP1 (e.g. cooperative/doing and conflict/thinking); and 3) practical considerations including synergies with other SONNET work and building upon consortium expertise, relations in the field and interests of country teams. The following six SIE-fields have been selected in different national contexts:



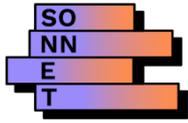


Circle: Cooperative organisation models for renewable energy; Triangle: Framings against fossil fuel energy pathways; Square: Local electricity exchange; Star: City level competition for sustainable energy; Rectangle: Participatory incubation and experimentation; Half Moon: Financing and subsidies for renewable energy.

Figure 2: Illustration of SONNET's embedded, multiple case study applied, including national context

In the UK, we have produced case study reports for the following SIE-fields: 1) Framings against fossil fuel energy pathways, 2) Local electricity exchange and 3) Financing und subsidies for renewable energy.

See deliverable 3.1 for more information about SONNET's embedded case study approach.



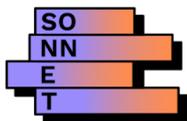
2 INTRODUCTION TO SIE-FIELDS AND SIE-INITIATIVES STUDIED IN THE UK

In the UK we have examined the following SIE-fields: 1) Framings against fossil fuel energy pathways (FAFF), 2) Local electricity exchange (LEE) and 3) Financing and subsidies for renewable energy (FS RE). In this section, we briefly outline how we have defined each SIE-field and its boundaries. In addition, we introduce the SIE-initiatives and SIE linked to the SIE-fields.

FAFF - Within ‘framings against fossil fuel energy pathways’, we have traced the creation and development of different framings against energy pathways centred on fossil fuels. These framings can contain problem descriptions and envisioned alternative futures. Behind these framings can be multiple actors, such as NGOs, initiatives and network organisations (all of these can be more or less formalised groups) that work locally, regionally, nationally but also internationally against energy pathways centred on fossil fuels. Their aim is to change dominant (societal) discourses about existing fossil fuel energy pathways, influence policymaking and/ or impact fossil fuel productions. We kept the definition of framings relatively open – sets of ideas, concepts, metaphors, discourses and/ or story-lines’ - and explore them in combination with actor’s activities, events, etc. All types of framings against fossil fuel energy pathways are explored (e.g. oil, coal, natural gas and more generally fossil fuels). These are non-renewable resources that are either imported and/ or extracted through drilling and mining and then burnt to produce electricity or refined for use as fuel for heating. Although the SONNET project mainly concentrates on examining SIE developments in relation to electricity and heat, this SIE-field investigation does not draw clear distinctions around fossil fuels being used for electricity and/ or other forms of energy consumption. We study this SIE-field in Poland, the Netherlands and United Kingdom (UK).

The UK case study concentrates on ‘framings against fossil fuel energy pathways’ that are connected to anti-coal, anti-onshore oil and gas (including anti-fracking and wider anti-gas-fired power stations), and anti-investments into fossil fuels (i.e. derived from fossil fuel divestment). These boundaries seem to make sense in the UK because all represent the most dominant framings against fossil fuel energy pathways over the past ten years, including diverse histories, actors’ relations, activities, etc. When reading the case study, it is possible to argue that anti-onshore oil and gas, anti-coal and divestment in the UK do not make up one SIE-field but rather consist of several ones. Most of the actors are only involved in one of these activities and the SIE-fields seem to have their own pathways (when, for instance, looking at policy developments over time). It is also important to state that the UK fieldwork has focused more on the activities of SIE-field-actors (e.g. NGOs and local groups) rather than other field-actors (e.g. policymakers). The SIE-initiatives, described in the case study, are mainly made up of local groups and regional intermediaries. This has influenced the overall storyline of the case study. In the UK, several policy changes have occurred in this SIE-field over the past years (e.g. deadline for the phase-out of coal and moratoriums on fracking) that could be interpreted as major achievements for SIE-field-actors. The historical account in the case study shows that the story is not as straightforward as it might seem at first sight.

LEE - The SIE-field called ‘local electricity exchange’ (LEE) includes discourses and activities derived from the development of producing, consuming, distributing and trading renewable energy locally (i.e. close to its point of generation). In this SIE-field, the SIE is defined as ‘social innovation in local electricity exchange’. These are multi-actor collectives (including multiple non-traditional energy players) experimenting with and implementing novel financial, institutional, technical (digital) and business model innovations to enable grid-connected local/regional renewable energy exchange (which includes producing, consuming, distributing and sometimes trading of energy). The aims of the initiatives and other activities related to LEE is to achieve a greater penetration of renewable energy into current energy systems and to reform an electricity market, which used to be seen, at least in the UK, as a field monopolised by big industry players.

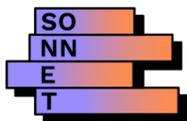


The boundaries of the SIE-field are defined by existing approaches to local electricity exchange (e.g. microgrids, community self-consumption models, some forms of Power Purchase Agreements (PPAs)) and projects and technologies that are being developed tested (e.g. projects trialled through regulatory ‘sandbox’ schemes and virtual platforms). In the UK, they are embedded in a wider context of electricity market reforms, and largely shaped by trends such as the digitisation of energy systems, deliberations about future energy scenarios, climate change challenges, community energy developments, creation of new business models in the energy sector, and a greater penetration of renewables into the energy system. In additions, issues such as community cohesion, fuel poverty, anti-monopoly, citizen involvement are being discussed as part of these developments. As the policy and regulatory context for LEE in the UK is extremely important (the field is highly regulated and the main contestations are happening around regulatory changes), the SIE-field also features lobbying initiatives and campaigns for or against particular policy and regulatory changes (e.g. the Local Energy Bill). The boundaries of the SIE-field are being actively negotiated and re-drawn in the last few years as new actors are entering the scene forming alliances with traditional players (e.g. DNOs or local authorities) and newcomers (i.e. technology companies e.g. digital platform providers). As a result of this, new propositions for local/regional production, distribution and trading of electricity are being discussed, tested and in some cases implemented.

FS RE - The third case study looks at the development of financing and subsidies for renewable energy over time and how they have changed social relations, i.e. novel actor constellations (including new relations between actors or new roles for actors in a national context) in the UK. We suggest that ‘financial mechanisms’ encompasses both, the ways in which activities are ‘financed’ through debt, equity, or grants, and the revenue streams that the activities generate, including subsidies. We also included subsidy mechanisms for renewable energy as government support for alternative sources of energy has been crucial for development of the sector. Admittedly, the use of subsidies to renewables is motivated by the need to address market failures, such as to address the price disparity with fossil fuels; they have been credited with increasing innovation, lowering costs and expanding the energy mix. In the UK, subsidies have led to a significant increase in the deployment of renewables, leading to a rapid decrease of the cost of some of these technologies. The scope of the study is restricted by looking at the financial flows which have supported the creation of wind and solar photovoltaic generation over the last 10 years — with some historical background reaching back to privatisation of the UK electricity supply industry in 1989. Both wind and solar PV are relatively new renewables, and during the period covered the SIE-field has been through lots of changes including social transformations. These technologies (wind and solar) have a number of technical similarities compared with other sustainable energy sources, but also some notable differences of relevance to the social relations involved.

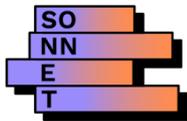
Table 1: Overview SIE-field, SIE and SIE-initiative examined in the UK

Name of SIE-field	Description of SIE-field & its boundaries	SIE definition linked to SIE-field	SIE-initiatives investigated	SONNET countries
Framings against fossil fuel energy pathways	Within ‘framings against fossil fuel energy pathways’, we are tracing the creation and development of different framings against energy pathways centred on fossil fuels. These framings contain problem descriptions and envisioned alternative futures. Behind these framings can be multiple actors, such as NGOs, groups and network organisations, working locally, regionally, nationally but also internationally on anti-fossil fuel goals. Their explicit or implicit aim is to change dominant (societal) discourses about existing energy pathways,	The SIE is based on different framings (but also includes protesting and lobbying work) derived from different groups and organisations that aim to ‘stop’ fossil fuels being extracted, mined and/ or invested in. This includes framings derived from anti-coal, anti-onshore oil and gas (fracking) groups and the divestment movement.	Campaign to Protect Pont Valley; Anti-fracking groups in Balcombe; Free Fossil Fuel Sussex; Roseacre Awareness group; Preston New Road Action Group; Don’t Drill The Wright – These are all local SIE-initiatives.	Netherlands & Poland



	influencing policymaking and/ or 'stopping' local fossil fuel productions.			
Local electricity exchange	The SIE-field called 'local electricity exchange' includes discourses and activities derived from the developments of producing, consuming, distributing and sometimes trading of energy locally (i.e. consumption close to its point of generation).	The social innovation in local electricity exchange can be defined as multi-actor collectives (including multiple non-traditional energy players) experimenting with and implementing novel financial, institutional, technical (digital) and business model innovations to enable grid-connected local/regional renewable energy exchange.	Wadebrige Renewable Energy Network, Energy Local, Ripple Energy, Ofgem's sandbox trials	France & Switzerland
Financing and subsidies for RE (solar and wind)	The SIE-field called 'financing and subsidies for renewable energy' looks at the development of 'financial mechanism' surrounding renewable energy (solar and wind) over a ten year period. 'Financial mechanisms' encompasses both, the ways in which activities are 'financed' through debt, equity, or grants, and the revenue streams that the activities generate, including subsidies. We also included subsidy mechanisms for renewable energy as government support for alternative sources of energy has been crucial for development of the sector.	The social innovation in this SIE-field is defined as 'financial mechanisms' and subsidies through which novel multi-actor constellations (including new relations between actors or new roles for actors) have emerged who are involved in renewable energy (in particular, solar and wind).	Abundance, Leapfrog Finance	Netherlands & Poland

The next section outlines the UK energy sector, in particular, the national energy system, the governance of the energy system, major energy policy changes, and social and cultural changes linked to the energy sector.



3 BRIEF INTRODUCTION TO THE UK ENERGY SECTOR RELEVANT FOR SIE

This section briefly outlines the UK energy sector, in particular, the national energy system, the governance of the energy system, major energy policy changes, and social and cultural changes linked to the energy sector. Rather than providing an in-depth outline, the purpose of this section is to highlight key aspects and changes that are relevant for SIE. It provides a context for reading the three case study reports (see appendix 1).

3.1 Description of national energy system & governance of energy system

Observers claiming a birds-eye view of the energy system in the United Kingdom (UK) contend that it has undergone a major transformation in the past ten years (IEA 2019; Wilson et al. 2020). In 2011, the dominant regime for heating and power was described as “a centralised system, dominated by large players, with centralised technologies, large-scale transmission and distribution networks for electricity and natural gas, and supporting institutional frameworks” (Foxon 2013:14). Electricity generation in this system was heavily based on coal- and gas-fired power stations – 75% of electricity generation was from coal and natural gas in 2010 (Wilson et al. 2020) – with large nuclear plants also contributing (Foxon 2013).

Since then, the UK government has committed to shift towards a more sustainable energy system (e.g. UK Low Carbon Transition Plan 2009), with the emphasis on the decarbonisation of the national energy system. The national framework is most directly articulated in law under the terms of the Climate Change Act 2008, although it is recognised that the broader objectives of energy policy aim to address other facets of the energy trilemma (i.e. carbon emissions, affordability and security of supply) (Thomas and Ellis 2017). The Act commits the UK to greenhouse gas emissions reductions of 80% from 1990 levels by 2050. More recently (in 2019), the UK Government and devolved administrations committed to the Net Zero target as recommended by the Climate Change Committee.

The UK has seen very rapid growth in the share of low-carbon energy, which accounted for over 50% of the electricity mix in 2017, and energy-related CO₂ emissions have concurrently fallen by 35% on 1990 levels (IEA 2019). Moreover, between 2010-2019, the amount of electricity consumed in the UK fell by nearly 15% (Wilson et al. 2020). Figure 3 below shows the mix for electricity generation in the UK over time. Coal, which historically provided a large proportion of the electricity mix, is declining, and renewables are growing. In addition to electricity, other broad areas of demand for energy are heat and transport. These areas of demand are currently largely fuelled by natural gas or petroleum in the UK. However, some parts of the heat and transport sectors are beginning to use more electricity, such as electric heating and vehicles.

Critics of the UK’s energy transformation suggest that it has been heavily shaped by the legacy of fossil fuel use and associated institutions and ideas (Lockwood et al. 2019). They suggest that whereas the UK government has proactively pursued, for instance, nuclear technologies (as well as until recently shale gas) with little evidence of success, support for renewables has been inconsistent and underwhelming, and the most significant impact on decarbonisation has been through fuel switching (coal out, gas in), which has been ultimately driven by EU directives (Lockwood et al. 2019). On the 18th of December 2021, the Prime Minister, Boris Johnson, outlined the Ten Point Plan for a Green Industrial Revolution (including energy issues). The plan had a mixed reception from welcoming such ambitious targets to critiquing its fixation on often speculative, technical solutions.

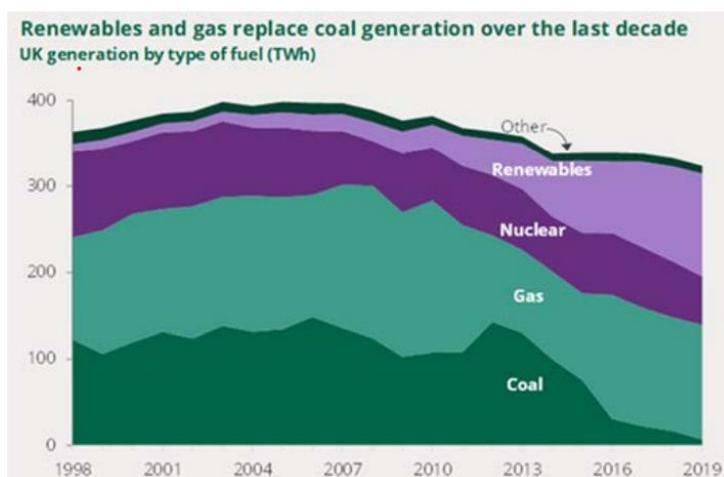


Figure 3: UK electricity generation sources (1998 - 2019) (BEIS 2020)

By adopting market-based (incentivising and internalising) policies, conditions in the UK have favoured the development of large-scale projects by centralised corporate utilities (especially nuclear), over the development of small-scale installations by local communities (Nolden 2013). This approach or ‘pathway’ to transition has been characterised both in terms of the “neoliberal approach to energy” (Devlin 2015, 2) and the preference for “working with incumbents”, rather than “unleashing new entrants” (Geels et al. 2016, 897).

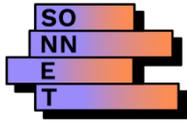
This preference for large-scale projects also operated within the renewables market, with the result that offshore wind installations – which tend to be large scale and are getting successively larger – have represented the major increase in renewable capacity. Thus, although large energy providers are no longer as dominant in energy markets as they were – with a more diverse range of providers specialising in renewable generation having entered in the past decade – UK electricity systems are still highly centralised and privately owned.

When thinking about energy governance in the UK, it is important to consider its devolved administrations (Scotland, Northern Ireland and Wales). The UK has national strategies to decarbonise its energy sector, yet its devolved administrations determine the rate and extent of the decarbonisation process. They have different formal powers: “Northern Ireland actually has the greatest extent of devolved powers, despite the fact that is the smallest administration; Scotland has the largest share of renewable resources and has aspired to greater autonomy in the field of energy, yet it acts on a narrower formal legal basis; and Wales has a much more limited range of devolved energy powers” (Thomas and Ellis 2017, 2&8).

This account, whilst aiming to be comprehensive, obscures the role of drivers and trends that elude a technology-push analytical framing and/or extend beyond the UK context, such as the impact of outsourcing manufacturing and the financial crises on electricity consumption. Nonetheless, they provide a big picture of the UK energy system and how it has changed over the past decade that can be explored from other complimentary angles.

3.2 Understandings of ‘social innovations’ in the energy sector

In the UK, the term Community Energy (CE) is widely used in the energy sector. This is prevalent in both scholarly and grey literatures, as well as policy documentation, and is also reflected in the naming of organisations, such as Community Energy England (CEE), and specific policy documents, such as the Community Energy Strategy (DECC 2014, 2015). Whilst Smith et al. (2016, 412) acknowledged that “ambiguity, ambivalence, and improvisation characterise use of the term ‘community energy’”, their research into the UK CE sector was able to identify some key characteristics. For them, CE includes “a variety of sustainable energy practices, singularly or in combination” and ideally “involves high community



control over the process for the project and receives substantial benefits from project outcomes” (Smith et al. 2016:412).

CE projects involve a variety of sustainable energy practices, singularly or in combination. In the UK, these include renewable energy projects – such as neighbourhood solar energy; projects dedicated to retrofitting for energy efficiency – such as solid wall insulation in homes in a neighbourhood; activities aimed at supporting sustainable energy changes in people’s homes; and initiatives for the collective purchasing of sustainable energy, just to mention a few. Organisationally, the groups driving this activity take a variety of forms, including formally constituted cooperatives, social enterprises, volunteer organisations, as well as informal associations of neighbours (Seyfang et al. 2013).

The relationship between the term CE and social innovation in energy (SIE) is subtle and open to interpretation. There is clear overlap between the two concepts (CE and SIE), but they are not synonymous. Crucially, SIE also encompasses activities lead by central state and market actors and is not defined in relation to a specific ‘community’ that is involved in or benefits from it, but rather to broader transformations of ‘social relations’. Moreover, in a departure from prominent definitions of social innovation (e.g. BEPA 2010), within SONNET, SIE is not assumed to be socially beneficial – the requirement is only for SIE to change social relations and involve new ways of doing, thinking and organising energy (Wittmayer et al. 2020). However, it is important to introduce the term CE in the UK context because this might be the first thing energy practitioners and scholars think of when talking about social innovation in energy. CE is a term that has been differently defined and nowadays often includes multi-actor collaborations (e.g. local energy group, city administration and energy start-ups).

Policy interest in CE in the UK reached a point where, in January 2014, the Department of Energy and Climate Change (DECC) launched a national Community Energy Strategy. Prior to the strategy, a series of policies going back to the early 1990s had provided limited opportunities for CE development. Policy measures were often uncoordinated, poorly designed, and hurriedly implemented. The reception of the strategy was mixed (Mirzania et al. 2019). For instance, as part of the strategy CE actors lobbied for a Feed-in-Tariff (FIT) version that worked for them, but this was never successful. Nonetheless, FIT did stimulate a boom in the growth of CE from 2010-2014, which then subsided as successive cuts to and subsequent removal of the FIT caused extreme deceleration in the growth of the sector and diversification of existing CE away from supply and towards demand management, distribution and storage (UKERC 2018). These aspects of the socio-political environment for CE/ SIE in the UK are neatly summarised by Simcock et al (2016, 3), as follows, “compared with Denmark and Germany, the UK has had a less stable environment for CE. The centralised nature of UK energy markets and policy made CE a rarity until the advent of Feed-in Tariffs (FITs) in 2010, which led to rapid growth in community projects, and the 2014 introduction of a Community Energy Strategy. Recent policy changes, including reductions to FITs, have slowed this growth.” Community Energy England proclaimed 2018 to be the “toughest year yet” for CE in the UK (CEE 2019, 6).

In June 2020, Community Energy England and Community Energy Wales published the CE: State of the Sector 2020 Report. Key findings of the report have been: “2019 was a challenging year for the CE sector: The sector has been negatively impacted by recent reductions in subsidy support and unclear government strategy. CE is playing an ever-increasing role in technical and social innovation: The sector is developing business models and exploring innovative new approaches to deliver a low carbon future. CE across the UK needs clear guidance and support: The sector must be supported to access new emerging opportunities, ensuring the long-term growth and impact of the sector” (CEE 2019, 9).

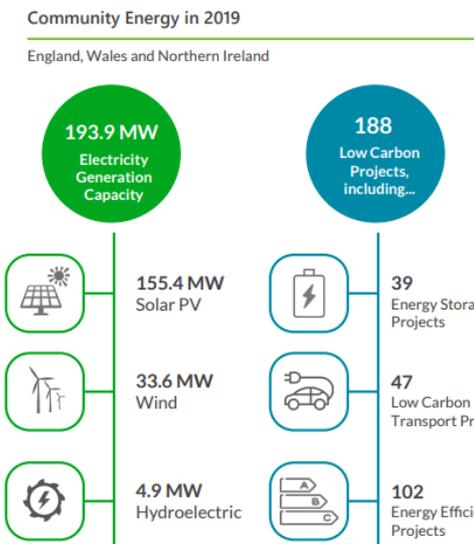


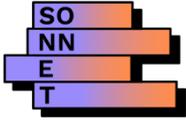
Figure 4: State of the UK community energy sector in 2019 (CEE 2019)

The climate crisis discourse has also had an impact on the CE sector, which is reflected by Community Energy England’s (2019, 1) observation that CE initiatives are increasingly working “to take action on the climate crisis”. Looking to the future, many CE initiatives are likely to pursue this aim through a “greater focus on energy efficiency and awareness-raising” as well as “electrifying transport, flexibility services, demand side response, local energy supply and peer-to-peer (P2P) trading” (CEE 2019, 1). Although UKERC (2018, 6) suggests that local and devolved government interest in CE holds the potential to support these developments through the use of new public private partnership (PPP) models, it also observes that the CE sector is “still in flux and not yet coalescing around a ‘new normal’”. Another issue that the CE sector has been keen to address is its apparent lack of demographic diversity, in terms of age groups (strong bias towards involvement of older generations and only 6% under 25 in 2018), genders (30% female in 2018), ethnicities (4% BAME involvement in 2018), sexualities (1.6% LBGTQ+ in 2018) and neurodiversity (3% in 2018) (CEE 2019). Addressing this issue may open up further opportunities for the CE sector to support the UK Government in its aim to meet the new (tougher) target of reaching net-zero emissions by 2050.

3.3 Major historical energy policy changes

A brief historical account of energy policy in the UK starts with the government policy towards market liberalisation linked to the privatisation of state-controlled energy companies in the 1980s through the Conservatives (the Gas Act 1986 and the Electricity Act). The Office of Gas and Electricity Markets (Ofgem) was created in 1986 and still regulates the energy market (there also are the Oil and Gas Authorities and Office for Nuclear Regulation). Throughout the 1990s the main interest of Ofgem was to create a competitive energy market. By the mid-2000s, the energy market was dominated by what has been known as the Big Six energy suppliers (British Gas, EDF Energy, E.ON, npower, Scottish Power and SSE).

From early 2000s, climate change rose on the policy agenda. The energy policy of successive governments has centred around three objectives of security, affordability, and decarbonisation (sometimes referred to as the energy ‘trilemma’). The main policies that have driven energy transformations are the UK government’s 2008 Climate Change Act, which required an 80% reduction in UK greenhouse gas emissions by 2050 relative to 1990 levels (updated in 2019 to net-zero by 2050); the Paris Agreement, signed in 2015 at the UNFCCC’s COP 21, which introduced even more challenging long-term targets (Becker et al. 2019; UNFCCC 2015); and EU Directives regulating sulphur and nitrogen oxide emissions and incentivising renewable generation (Lockwood et al. 2019).



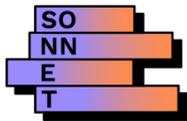
According to the central UK government discourse, the Climate Change Act has thus far been delivered through four key areas of development: (1) increased generation from renewables, (2) increased energy efficiency, (3) increased generation from nuclear, and (4) carbon capture and storage (CCS) (DECC 2011), pursued through various measures that provided incentives for investment in energy efficiency and low-carbon generation respectively (Barton et al 2018). This technology-push approach is characterised in a report commissioned by the UK Energy Research Centre (UKERC) as follows, “most efforts to decarbonise the UK energy system in line with government targets focus on technical aspects of the problem, such as costs, infrastructures and technological change” (Chilvers et al. 2017, 1).

A brief and recent historical account of energy policies can also be told through some of its energy white papers:

- The 2003 energy white paper ‘Our Energy Future’ established a formal energy policy for the UK for the first time in 20 years, recognising that a limitation of carbon dioxide was necessary.
- The 2007 energy white paper ‘Meeting the Energy Challenge’ also emphasised the issue of energy security alongside carbon emission reduction.
- The Climate Change Act was published in 2008.
- In 2009 the UK’s Low Carbon Transition Plan was published, detailing the actions to cut carbon emissions by 34% by 2020.
- The Energy Bill 2012-2013 aimed to reduce the UK’s dependence on fossil fuels and outlined financial incentives to reduce energy demand. New generation of nuclear power stations was outlined.
- The Electricity Market Reform (EMR) programme was initiated by the Coalition Government in 2010 through the Energy Act 2013.
- In 2016, the Department for Business, Energy and Industrial Strategy (BEIS) was established and took over the responsibility for energy policy from the Department of Energy and Climate Change (DECC 2008-2016).
- The 2020 energy white paper ‘Powering our net zero future’ outlines the net zero target and efforts to fight climate change, following the Prime Minister’s Ten Point Plan for a Green Industrial Revolution.

But what about SIE and CE in this policy landscape? Some policy support for small-scale, decentralised and community led development has been partly pursued by the government, through different channels. In the late 1990s the rhetoric of ‘new localism’ and ‘community’ emerged within energy policy developments in the UK. Although community-based energy initiatives had been around for over thirty years, these approaches were relatively unnoticed in energy policy. Government programmes (alongside those of NGOs and private sector organisations) were created to support energy initiatives (such as Community Action for Energy initiatives). Walker et al. (2007, 74) acknowledged that this was not a “pragmatic shift in thinking, but rather a fragmented and partial recognition that community approaches had a role to play in ‘co-provisioning’ alongside established energy generation”, diminishing public opposition to wind farms, and enhancing rural generation.

The newly arising community-related discourses became established in policy through inclusion of the term ‘community’ in numerous sections of energy white papers, for instance, ‘Creating a Low Carbon Economy’ (DTI 2003). The Energy Review titled ‘The Energy Challenge’ (DTI 2006) outlined how CE approaches could engage citizens in wider energy issues to create greater awareness. The period of 2009 and 2010 was shaped by an increase of government support for CE introducing numerous government programmes (some of which replaced old ones). The UK Low Carbon Transition Plan was published in 2009, outlining a national strategy and aimed to support “communities” to tackle climate change and promote “sustainable growth” (Mirzania et al. 2019). The introduction of the FIT and ‘Renewable



Heat Incentive' (RHI)¹ in April 2020 was verified by the UK Low Carbon Transition Plan, to incentivise small-scale low carbon energy generation. CE initiatives lobbied for a CE FIT, which was considered but was never established. The Community Energy Strategy in 2014 & 2015 can be seen as signifying a “remarkable recognition of grassroots initiative in sustainable energy” (Smith et al. 2016). Still, support for CE through energy policy has been piecemeal and the UK government has failed to set targets behind supporting these activities. For more details see some of the case studies reports in the appendix (in particular, the FSM RE case study).

3.4 Key cultural and social developments

Over the past decade, public attitudes towards energy, the energy system and energy transitions in the UK have been shaped by the fact that the UK government has funded environmental and social initiatives through levies on energy bills (Demski et al. 2017). In 2011, levies represented 6% of gas and electricity bills in the UK; a source from 2012 reported that “by 2020, they are expected to account for 11%” (Demski et al. 2017, 4, citing Vaze and Hewett 2012). Thus, the issue of “costs” associated with energy system transitions is “particularly pertinent in the context of the privatised UK energy system, with recent debates in politics and the media around the cost of energy” (Becker et al. 2019, 237). In fact, 39% of respondents that took a YouGov survey in 2014 identified ‘energy prices’ as one of the top three issues affecting the nation, after ‘the economy’ (59%) and ‘immigration’ (49%) (reported in Demski et al. 2017).

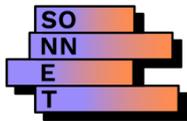
Moreover, recent focus group research exploring public perceptions of energy transitions in the UK found “pervasive distrust” towards energy companies’ and government’s motives and interests, “which were not perceived to correspond with their own” (Becker et al. 2019, 244). Issues raised by diverse participants in this study included lack of justice in the distribution of profits, lack of transparency, and collusion between institutional actors.

BEIS started to run a public attitudes tracker (PAT) in March 2012 (four times a year) on policies such as energy, climate change, consumer rights, artificial intelligence, and workers’ rights. Some of the key findings related to energy and climate change for the September 2020 wave of the tracker are presented below (BEIS 2020, 3,4):

- Eight in ten people (82%) in September 2020 were either very concerned (38%) or fairly concerned (44%) about climate change.
- The proportion of people who supported renewable energy was 80%. Just 3% of people opposed it.
- The proportion of people who had any awareness of fracking in September 2020 was 89%. Over a third of people (36%) opposed fracking and around a quarter (24%) supported it.

The past decade has also seen the rise of environmental movements in the UK (and across Europe) to decentralise and democratise energy services, emerging in response to the global recession, rising energy prices and increasing energy poverty (Hewitt et al. 2019). These citizen movements focus on local resistance to the development of onshore wind, nuclear and fracking, strengthening opposition to central government policy and the strong industrial lobbies for nuclear generation and fracking. The popularisation of the ‘climate crisis’ discourse also seems to have galvanised civil society campaigns and has had an impact on the energy sector. Several local authorities have declared a climate emergency and social movements (such as Fridays for Future and Extinction Rebellion) have been very active in the UK.

¹ The Renewable Heat Incentive is a payment system in England, Scotland and Wales, for the generation of heat from renewable energy sources. Introduced on 28 November 2011, the RHI replaces the Low Carbon Building Programme, which closed in 2010.



4 METHODOLOGY

4.1 Researchers' relations to the cases

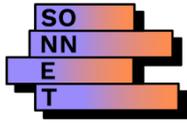
The SPRU researchers have previously conducted research into CE and energy issues in the UK. They have therefore had existing relationships with intermediary organisations, energy companies and CE initiatives. In the case of FAFF, the researcher was able to contact several SPRU colleagues, who have had previous engagements with some of the actors in the SIE-field. They could act as gatekeepers to gain access to some of the interviewees. In the case of LEE and FS RE, it was possible to draw on existing relationships. In addition, the SONNET city partner's relations and academics who work on similar topics provided helpful insights into the SIE-fields. All interviewees showed enthusiasm in the participation and discussions of issues pertaining to the case studies.

All the interviewees were approached in the beginning with an introduction mail in which we outlined what SONNET is and asked under which conditions we could do research with them. Together with the email we sent a link to the SONNET website giving more background information on the project and said that interviewees would be able to respond to the case study report and gain access to it once it was completed. Most of the interviewees provided feedback on the reports and have been interested in the results.

Due to COVID-19 all the interactions with the interviewees happened via telephone and/ or video conferencing. This physical distance has influenced our research approach (as discussed in section 4.2). Still, all participants were extremely collaborative and offered their time. Most of the engagements with research participants were based on 1-3 hours interviews. Some of the engagements with interviewees had more depth because they provided additional information via email and/ or provided feedback on timelines and/or reports. Normativity was partly countered by looking for critical narratives about the SIE-fields. We searched for SIE-initiatives as well as other field-actors to gain an understanding of differing experiences and narratives of the SIE-fields.

4.2 Short description of methods

SONNET makes use of an embedded case study approach, aiming to describe SIE-fields using diverse units of analysis. The main unit of analysis is the SIE-field, whereas the subunits of analysis are made up of SIE-initiatives and SIE-field-actors (who work on SIE) and other field-actors (who intentionally and/ or unintentionally enable and/ or impede SIEs within a SIE-field) and SIE. The context refers to the 'outside' institutional environment linked to the SIE-field (wider socio-political, socio-economic and socio-cultural context), seeing that SIE-fields are nested within larger encompassing context. We have drawn on the innovation history approach to co-construct the emergence and development of a SIE-field (including SIE/ SIE-initiatives/ SIE-field-actors/ other field-actors). Case study researchers (through the document review) together with SIE-field-actors and other field-actors (through interviews) have co-created this history. In addition, we have taken inspiration from the critical turning points approach to examine critical instances/ processes where SIE-field-actors and other field-actors have conducted institutional work to create, maintain and/ or transform institutions. SONNET gathers data through conducting in-depth interviews, analysing documents and carrying out participant observation across the three embedded case studies in each national context. These three methods are being used to enable data enrichment and triangulation. The situation due to COVID-19 made it impossible to conduct face-to-face participant observation. We therefore joined online events conducted by SIE-field-actors. In addition, we carried out additional interviews and reviewed additional documents. The three methods are detailed in more depth within the following three sections. The fieldwork was carried out between July 2020 and January 2021.



4.2.1 Document review

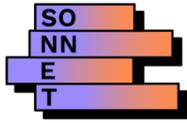
The first research activity often was the review of documents. We mainly relied on primary and secondary sources such as websites, journal articles, popular publications, media articles and social media channels to analyse how the SIE-fields emerged and developed over time. In the case study reports, we listed between 6-18 documents that have been reviewed per case study. These were chosen because we felt that the documents were particularly relevant for developing the historical narrative of the SIE-field within the case studies. Overall, we have reviewed more documents per case study. It is difficult to say how many we have reviewed in total. Most of these additional documents are listed in the reference list of the report. This is partly due to the overall aims of the documents review. We used the review of the documents to inform ourselves about the interviewees and their initiatives, to be able to gain a better understanding of the historical development of the SIE-field and identify key events for the timeline, and to get diverse perspectives and narratives of the SIE-field. Moreover, interviewees made us aware of reports, etc. The sampling of documents could therefore be described as a mixture between snowball, convenience and judgement sampling.

With reference to FAFF, we conducted a search in ScienceDirect with several search terms (e.g. fracking in the UK) to gain a selection of journal articles that outline different UK framings against fossil fuel topics derived from the social science energy literature. A wide variety of journal articles emerged about anti-fracking (in particular looking at framings), fewer articles have come up about anti-coal and divestment. As part of the case study work, we also looked at several actors, groups and organisations' websites. Some of them have produced their own reports, statements, newspaper articles, etc. This also included policy documents (e.g. derived from DECC and BEIS). We chose to analyse the documents that helped us to deepen our understanding of key events and activities mentioned by the interviewees. Some activities are extremely well documented by people who are dedicated to researching and documenting framings against fossil fuel energy pathways in the UK (often in their spare time). Some of these websites provide a far more detailed historical account about particular movements and activities than we were able to do in our report (for onshore oil and gas, for example, see DrillOrDrop.com). The search was expanded upon based on the additional people, organisation, websites, etc. mentioned by the interviewees.

In the LEE and FS RE case, the review included research papers, projects reports, policy documents, official regulator's documentations, companies' reports, press/media outputs and news releases. An online search of documents was conducted. Some additional documents were shared or pointed to by the interviewees. The overview of the SIE-fields context and parts of the historical narrative were produced based on studying and analysing numerous websites derived from SIE-field-actors and other field-actors (for example, in the case of LEE: UK Government, Ofgem, Elexon, EnRev, energy projects websites). An academic literature search was also conducted using e.g. GoogleScholar, ScienceDirect and including several search terms (for example, for the LEE case: peer-to-peer trading, local electricity exchange/trading, electricity market, local energy, and smart energy communities). The review of the recent academic social science energy literature helped to better understand key terms and aspects linked to the SIE-fields.

4.2.2 In-depth interviews

The three main research questions and minor ones outlined in the methodological guidelines were translated into an interview guide for the in-depth interviews (see deliverable 3.1). This interview guide was used in conducting interviews for all three case studies: FAFF, LEE and FS RE. Overall, the interviews differed slightly due to the different role, position and background of the interviewees in relation to the SIE-field. The difference can be found in terms of the overall time spent on the interview, the amount of time spent on each of themes in the topic guide, as well as the use of open questions that arose during the interview. Some of the individual interviews had specific foci and did not include all the themes listed in the topic guide. The document review was started beforehand and continued in parallel to conducting



in-depth interviews. A detailed list of key events that make up the historical narratives was developed. The list of events was sometimes discussed as part of the interviews when some events were added and/ or more details were provided (a detailed list of events can be found in the appendix of each case study report). Most interviews lasted between 1-3 hours and were conducted by one of the UK researchers. Interviewees were selected based on their role in and their relationship with the SIE-field, as well as in response to referrals from interviewees.²

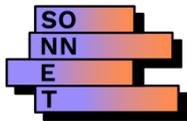
With reference to FAFF, 11 in-depth interviews were conducted. We gained an overview of key organisations through preliminary internet searches and talking to colleagues at the Sussex Energy Group, who have engaged with the movements. These colleagues supported the search to gain interviewees for the fieldwork i.e. they worked as gatekeepers. Being introduced to an interviewee through a trusted person seemed key for people to agree to be interviewed. The sampling strategy was therefore based on convenience and snowball sampling. We have spoken to more people who have been involved in anti-onshore oil and gas than anti-coal and divestment. The interviews have mainly been with people involved in local and regional activities and national organisations. The interviews with the participants provided a good overview of their emergence and development of the SIE-field over time and the influence of wider regulatory, social and policy changes.

In the case of LEE, 15 in-depth interviews with 16 participants were conducted. Pre-existing contacts were used to recruit the first interviewees. A snowballing technique allowed to expand the contact base; online searches also helped to identify relevant organisations/ people who presumably represent key SIE-field-actors (e.g. through LinkedIn). A diverse range of interviewees make the existing sample based on the following categories: representatives of the CE sector (community groups and trade organisations), a regulator (Ofgem), researchers, industry experts, intermediaries, an energy company, a distribution network operator, and a not-for-profit organisation. The first interviews (mainly with academics) were explorative and helped gain understanding of the key issues pertaining to the development of the SIE-field, identify relevant actors and define the boundaries of the SIE-field.

For the FS RE case, eight in-depth interviews were conducted. Pre-existing contacts were used to recruit the first interviewees. A snowballing technique allowed to expand the contact base; online searches also helped identify relevant organisations/ people who are representative of SIE-field-actors. A diverse range of interviewees included representatives of the CE sector, financial institutions and academia. The first interviews were rather exploratory and helped to make decisions about the boundaries of the SIE-field and the focus of the study.

All interviews were recorded with consent by the interviewees and transcribed use the NVivo transcription tool. The quality of the transcriptions varied, and additional editing of transcripts was required; parts of the interviews were therefore manually transcribed. During the interviews, the interviewees were told that the interview data would be treated confidentially and that they would be quoted anonymously in the case study report. After having written a first full version of this report, we checked with every interviewee how they would like to be referenced in the report (organisation's name, anonymously, etc.), whether we could use their direct quotes (providing an opportunity to edit the quotes) and whether there is anything they would like to share after having read the report.

² See the annex in each case study report for a full list of interviewees.



4.2.3 Participant observation

Due to COVID-19, it was not possible to conduct face-to-face participant observation. We joined several online events that took part during the period of field work (a minimum of two per SIE-field). The events varied i.e. they were organised by different types of actors, had a local and/ or international reach and were related to several purposes (e.g. academic seminars and experience sharing between local initiatives). See full list of events in each case study report.

4.3 Description of analysis

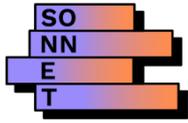
Once we collected the data, we analysed it before writing up the three case study reports. This has not been a linear, but rather ‘messy’ process where we went back and forth between collecting data, writing up parts of the report, going back to our data, and sometimes holding another interview. A list of codes (and their descriptions) was developed by the SPRU and DRIFT teams and sent to the SONNET team (e.g. SIE-field contestations, institutional work, and SIE-field-actor’s activities). The list was mainly used as inspiration to carry out some of the coding of the material and analysis of the collected data from the three research activities for each SIE-field. Some of the data was coded in the qualitative software tool NVivo. Other material was colour coded and/ or summarised. For example, for the FAFF case, the documents were coded in NVivo whereas the interviews were partly put into themes through colour coding the material. The historical narrative in the case study report was written up by looking across the coded material and summaries. For each report, several time phases were inductively identified to structure the historical narrative. In addition, the boundaries of the SIE-field and answers to the three research questions were formulated. An internal review of the case studies was carried out within the SPRU team, by our city partners (i.e. Bristol City Council) and a SONNET researcher.

4.4 Reflections on overall methodology

The research on the SIE-fields was designed in accordance with the methodological guidelines (see deliverable 3.1). As such the research was guided by the three research questions outlined in these guidelines and the underlying conceptual framework (see deliverable 1.2). For reporting on our research, we used a SONNET case study report template developed and approved by the consortium. In the case of FS RE two researchers were working on the case study and writing up the research report. The FAFF and LEE case study reports have single authors.

With reference to FAFF, considering that much has happened within the SIE-field over the last ten years and some might argue that anti-coal, anti-fracking and divestment deserve to be studied in-depth in their own right, there are clear limitations to the case study. The focus of the historical account is based on (and partly limited by) the people that we were able to interview, number of documents and websites we could examine and the time we had to conduct the research (1.5 months). For instance, we have spoken to more people who have been involved in anti-onshore oil and gas than anti-coal and divestment. The interviews have mainly been with people involved in local and regional activities and national organisations. The people involved in the initiatives provided a good overview of their emergence and development of the SIE-field over time and the influence of wider regulatory, social and policy changes. We have also gained an overview of national developments through reviewing the recent academic social science energy literature (where a vast amount of literature has been written about ‘fracking’ but less so on anti-coal and divestment movements) and examining several websites (e.g. Coal Action Network and DrillOrDrop.com).

In the case of LEE, the research started with exploring ‘local P2P electricity exchange’ for domestic energy consumption as the foci of the case study. As it became apparent that there is no working P2P electricity exchange/ trading models and P2P markets in the UK (except for a few trials), the boundaries of the study were expanded by including SIE-

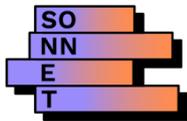


initiatives connected to the national grid that claim to have some elements of local P2P electricity trading or to be representative of local electricity exchange. Local electricity exchange as a broader concept allows including some of the innovative approaches that aim to match local renewable energy generation with local consumption. As the SIE-field, local electricity exchange, and its core component, peer-to-peer electricity trading, are very new phenomena, the historical account of the SIE-field's development focused more on the last five to six years, when the most noticeable and illustrative initiatives happened, as well as the policy changes relevant for this case study.

In the case of FS RE, the research started with exploring 'financial mechanisms for renewable energy' looking at the broad range of mechanisms and RE technologies. After some preliminary research, due to high volume of materials related to financial and subsidy mechanisms for renewable energy in the UK, the decision was made to limit the scope of the study by focusing on the most established renewable energy technologies, i.e. wind and solar PV. Both wind and solar PV are relatively new renewables, and during the period covered in this report the SIE-field and its institutional context have been through lots of changes. Choosing the foci of the study allowed us to explore in more detail the evolution of relevant financial and subsidy mechanisms and their effect on social innovation surrounding these technologies over time. We also pick these technologies (wind and solar) because they have several technical similarities compared with other sustainable energy sources (which helps keep the story of their financing manageable), but also some notable differences of relevance to social relations involved. As the SIE-field has a relatively long history that goes beyond the 10 year period, the historical account of the SIE-field's development started with the 'pre-history' noting developments in the financing of renewable energy generation from the privatisation of the electricity supply industry in 1989 up to the financial crisis of 2008, in order to establish the context for what follows, including a number of significant actors and financial mechanisms.

There are certain limitations to the LEE and FS RE case studies due to a limited number of interviewees and types of actors they represent, documents and online resources that could be accessed and reviewed, and the timeframe for conducting the research. Another factor is a limited empirical base for a LEE case study – there is still a lack of initiatives in the UK that would fit the adopted definition of this SIE-field; and it was not always possible to gain access to existing SIE-initiatives.

Finally, in all the reports we were looking at Great Britain (England, Wales and Scotland) rather than the whole of the UK. This is due to the framework for electricity grid in the country. For consistency the term 'UK' is still used unless the documents or interviewees explicitly referred to 'Great Britain'. It is also possible to see an emphasis on studying England before Wales and Scotland.



5 SUMMARY OF EACH CASE STUDY REPORT: THREE SIE-FIELDS AND THEIR SIE-INITIATIVES

5.1 Introduction

This section provides a summary of each case study report. The summaries are structured around answering the major and minor research questions (as outlined in D3.1) and are based on the three empirical foci (as outlined in section 1) that have guided the empirical work and conceptual and methodological work outlined in D1.1, D1.2 and D3.1. The foci are: 1) Emergence, development and institutionalisation of SIE and SIE-field over time, 2) SIE-field-actors and other field-actors' interactions with the 'outside' institutional environment, and 3) Enabling and impeding factors for SIE-field-actors and other field-actors to conduct institutional work. The structure of answering the major and minor research questions has been chosen to ease the cross-case comparison across the 18 SONNET case studies that will be presented in D3.3 (i.e. it will be possible to compare each answer across the 18 case studies, providing a starting point for the analysis). For a reader, who is not part of the SONNET project team, these summaries might be too dense (i.e. moving between empirical and conceptual reflections) and therefore difficult to follow. A better starting point to understand the SIE-fields might be the case study reports that provide an empirical narrative of the historical development of the SIE-fields. The full case study reports of the three SIE-fields and their SIE-initiatives studied in the UK can be found in the appendix of this report.

5.2 Case study 1: Framings against fossil fuel energy pathways

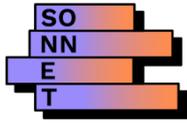
5.2.1 How have the SIE and SIE-field emerged, developed and institutionalised over time?

5.2.1.1 What are the relevant SIE-field-actors and other field-actors within the SIE-field and what are their roles within the SIE-field? How have these changed over time?

Behind 'framings against fossil fuel energy pathways' can be multiple **SIE-field-actors** (actors who work on SIE), e.g., NGOs, informal groups and networks, local initiatives and residents that work locally, regionally, nationally but also internationally and aim to change societal debates about fossil fuel-based energy pathways.

Opponents to the extraction of onshore oil and gas and mining of coal (who mainly create 'framings against fossil fuel energy pathways') can be: a) local groups and residents (e.g. Preston New Road Action Group, Don't Drill The Wight, United Valleys Action Group and Keep Cumbrian Coal in the Hole), b) regional network organisations (e.g. Weald Action Group and Frack Free Lancashire), and c) national organisations (e.g. Coal Action Network, Reclaim the Power, Friends of the Earth UK and Green Party). Some of the local groups are held together by grassroots network organisations such as 'Coal Action Network' and national organisations such as Greenpeace UK, Friends of the Earth UK and Reclaim the Power. Over the past year, as part of anti-coal activities, there is an increasing recognition of neocolonialism in European coal consumption, which has led to the creation of the international 'Still Burning' network.

The divestment movement has been mainly coordinated by two national organisations in the UK: 1) People & Planet, who coordinate the student movement and work closely with the National Union of Students and 2) 350.org, who work



with local councils and pension funds. Many of the groups involved in divestment are student organisations, although religious organisations, local and regional governments and other public bodies have also divested or have been targeted by divestment campaigners.

Organisations, who get involved in anti-fossil fuel are diverse in relation to their aims, levels of formality, activities, strategies and tactics that are sometimes decided on depending on the geographical focus and politics of change. Some of the **roles** of the local groups and residents have been to develop and carry out local campaigns i.e. they mobilise people around local campaigns and conduct several local activities to reach their aims. Network organisations have worked regionally and nationally. Their roles have been to be a contact point to organise networking and information sharing events between local groups. National NGOs have had a similar role, but they also are important in providing support for local groups and conducting lobbying and advocacy around these issues nationally and internationally.

Other field-actors (who enable and/or impede SIE) predominantly are the UK government (and its policies), authorities (e.g. Coal Authority and Oil and Gas Authority), local authorities, judges and barristers, academics (technical, natural science and social science), the Environment Agency (i.e. non-departmental public body for the protection and enhancement of the environment) and the Royal Society and Royal Academy of Engineering (i.e. national academy of engineering), actors from the finance sector, and universities just to mention a few. The UK government has promoted the extraction of onshore oil and gas over the past years but also has set targets for the coal phase out (policy developments are discussed in more depth in section 5.1.2.5).

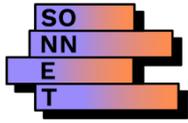
At first sight, the role of the UK government can therefore be described as being ambivalent. On the one hand, the government has set ambitious climate targets and decided on the phase out of coal. On the other hand, there is still invested interest in keeping the industry alive, for example, some opencast coalmines are being expanded and onshore oil and gas extractions and explorations have continued.

A licence is required by the Oil and Gas Authority or the Coal Authority, which grants rights to explore and extract onshore oil and gas and coalmine. Fossil fuel companies (e.g. Banks Group and UK Oil & Gas Investments) apply for these licences to be able to extract oil, gas and coal. In addition, they have to go through a local planning application process. This is how local authorities come into the picture, including organisations such as the Environment Agency (i.e. a non-departmental public body with the responsibilities to the protection and enhancement of the environment).

Interactions between SIE-field-actors and other-field actors usually occur at extraction and mining sites, at planning application meetings, and in court rooms. This is how additional other-field actors come into the picture, for example, the police, judges, lawyers, experts, planning officers, local councillors are a few key ones. This is where the boundaries between SIE-field-actors and other field-actors can sometimes become blurred.

For the divestment movement, field-actors are more diverse partly due to the nature of the activities. Divestment activities frequently are targeted at universities, banks and insurance companies. In terms of roles, the list of other field-actors shows that some of them are responsible to regulate and monitor the work of the fossil fuel industry. Other actors take the role of governing the developments of the industry within a broader energy system and/ or within local developments.

Changes to the roles of SIE-field-actors and other-field actors over time are not straightforward to identify or are very context specific. For example, the Coal Action Network used to support individual residence groups to fight local coalmines. Nowadays, they have also become more of an intermediary between the local groups. It is therefore questionable how relevant changes to actor's roles are for the development of the SIE-field. What seems to be relevant for the emergence and development the SIE-field over time is how SIE-field-actors' activities and narratives and the



wider public discourse have changed. For instance, the public acceptance of fracking has gone down over the past few years. These changes are outlined in more depth in 5.1.1.6.

5.2.1.2 What are relevant activities, aims/goals and narratives that have been developed and manifested by SIE-field-actors and/ or other field-actors within the SIE-field over time?

The SIE-field ‘framings against fossil fuel energy pathways’ is characterised by SIE-field-actors i.e. people and groups getting involved in a **diverse set of activities**, for example, campaigning work, taking on legal cases, mobilising groups of people and conducting protests and direct action (which can take several forms such as lorry surfing and bike rides), talking to policymakers and councillors, writing letters to the local MP, carrying out research about the topic, setting up local meetings to discuss the topic with neighbours and/ or fellow students, collecting objections to planning applications, talking about experiences to other groups and people, responding to government consultations, providing support and information to local groups and connecting them with others, collecting evidence for court cases and/ or planning application meetings, etc. For most of the local groups, these activities have been characterised by a steep learning curve to build up the knowledge, competences and skills to develop ‘frames against fossil fuel energy pathways’ over time.

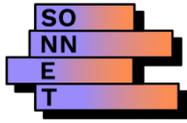
The activities in the SIE-field make the **diverse sites of opposition** that are linked to different types of actions visible, e.g. protest sites where banners can be flown, tents and living spaces and blockages can be erected to stop the fossil fuel industry, community buildings and/ or student unions where groups can meet up and talk to others about activities and strategies, council chambers where the industry’s planning applications are being decided and potential objections can be submitted, and court rooms where legal challenges against the industry can be fought (or the other way around).

What types of activities are carried out and who gets involved in the activities (i.e. who develops the ‘framings’) can be site specific, although, strategies are shared between sites and groups. Lots of the interviewees mentioned the amount of emotional work and stamina required to be involved in these activities, given that most of the people involved in this SIE have spent years and years on trying to influence the pathways of the fossil fuel industry. It is also worth recognising how deeply some people’s lives have been changed by getting involved in ‘framings against fossil fuel energy pathways’, becoming highly engaged in broad social and political issues.

Motivations for getting involved in ‘framings against fossil fuel energy pathways’ can be extremely diverse. For some of the SIE-field-actors getting involved might be part of their job, for others, it might be a way to tackle climate change issues, and for others, they want to stop a local extraction site because they live right next to it. Often groups of SIE-field-actors come together around a common problem framing, i.e. the need to stop, delegitimise and/ or decline the fossil fuel industry. More specific problem framings have also existed i.e. the need for local communities to be involved in deciding on new developments of local extraction and mining site (not just the national government).

For some of the local groups often the initial **aim** was to stop local extraction, mining and investment activities (or sometimes even just to inform themselves about it), but the more that people became involved the more the goals started to broaden for some of the group members. For example, some group members started to fight fracking in the whole of the UK and/ or get involved in climate change actions. The main aims of the divestment movement have been to create the political conditions to delegitimise the industry (i.e. undermine their social licence) and ‘confront corporate power and change the narrative around climate change’ (Bergman 2018:2). Aims for anti-onshore oil and gas and anti-coal groups and networks have been diverse and changing over time.

The creation of **narratives** is at the heart of this SIE-field (in the form of framings). Framings surrounding ‘shale gas’, ‘fracking’, etc. in the UK have been studied in-depth by the academic research community (e.g. Bomberg 2015; Cotton



et al. 2014; Nyberg et al. 2018). One of the most recent studies has been conducted by Williams and Sovacool (2019). They identified several key frames between 2010 - 2018: 1) industrialisation of the countryside; 2) bad governance (i.e. fractured democracy); 3) dirty fossil fuel; 4) elusive threats (i.e. bad regulation); and 5) no repeat revolution. They have found that from 2011 onwards most of the frames started to be used in the UK (Williams and Sovacool 2019).

The ‘bad governance frame’ was dominant between 2014 and 2015. This is when the Infrastructure Bill was debated and the Infrastructure Act received Royal Assent, leading up to the ‘Let Communities Decide Campaign’. Framings around anti-coal and divestment have not been studied in-depth by the existing literature. Based on the case study work, some of the changes within the divestment movement were based on questions such as who to target and how to frame the issue. It started off with the need for universities to divest from fossil fuel. Later on, the movement also targeted banks, insurance companies, etc. Parts of the movement tried to establish the idea of reinvestment into their campaign and/ or link the idea of divestment explicitly to economic arguments, pointing out that fossil fuel companies and their assets are currently overvalued.

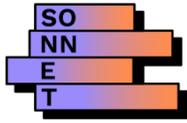
Although different framings existed, one of the core arguments remained the same: the need to exclude the fossil fuel industry from organisations investment portfolios as a way to damage their reputation and legitimacy. In the case of anti-coal, the announcement of coal phase out by the UK government meant that campaigns started to focus on ending coal now (rather than 2024) and prepare for anti-coal for steel production framings. There was also a slight shift campaigns by some of the anti-coal SIE-field-actors from campaigning locally and framing issues around local problems to drawing on broader climate change issues.

5.2.1.3 What types of interactions/ relations exist between SIE-field-actors and/ or other field-actors? What types of informal and formal alliances, networks, collaborations have existed (and possibly still do)?

The main focus of this answer is on the **interactions/ relations** between SIE-field-actors (some of the other field-actor interactions are examined in section 5.1.1.4). In the UK, some of the interactions/ relations between SIE-field-actors within the SIE-field have been built on some longstanding organisations - environmental organisations (e.g. Greenpeace and Friends of the Earth) and existing national grassroots direct action groups (e.g. Frack Off and Reclaim the Power) – who have organised and supported national, regional and local anti-fossil fuel campaigns and activities over a long period. They therefore hold some of the anti-fracking, anti-coal and divestment activities together, in particular, by supporting local groups to set up their own campaigns, providing information about anti-fossil fuel, taking on court cases against certain policy decisions and organising direct action (i.e. not all organisations get involved in similar ways). Moreover, an SIE-field-actor who might formally work for a divestment organisation can also informally get involved in organising anti-fracking events. Most of the interviewees (in particular the ones who spent most of their time and resources in getting involved in ‘framings against fossil fuel energy pathways’) had affiliations to several groups and organisations. Because of this, ways to organise, mobilise, lobby, take direct action, etc. are transferred between people, organisations, and locations (even across borders).

Although there are some clear differences between the framings (anti-fracking, anti-coal and divestment), the SIE-field is held together by some of the people who got involved in several anti-fossil fuel activities. Interactions between anti-fracking, anti-coal and divestment activities have also frequently occurred on an ‘ad hoc’ basis (Interviewee 11³). For instance, in 2017 an energy symposium was carried out at an anti-fracking camp, inviting anti-coal and divestment

³ Please find a full list of interviewees in the FFA case study report that can be found in the appendix of this country report.



campaigners. Sometimes, there have also been exchanges between anti-fracking and anti-coal camps. More frequently, upcoming news is shared between people (and organisations) across their social media accounts to increase the visibility of each other's activities.

There are several ways in which anti-fossil fuel groups seem to **collaborate and support each other**: creating networks and intermediary organisations (regional and national), encouraging people to get engaged in several activities, creating a core base of people to work on the campaign, developing clear messages for the campaign, having diverse strategies and tactics for campaigns and direct actions, helping to spread each other's messages and activities, and raising the profile of climate change to be able to influence decision-making, just to mention a few.

It is worth highlighting two aspects that have been mentioned by several interviewees: a) the role of social media & networks and b) the increasing public discourse around climate change. Social media has allowed groups to document protests and their policing to tell their own stories of what has been happening. In addition, groups are able to share stories with a wider audience – not only nationally but also internationally. Experiences, knowledge and support can be shared more widely and quickly, making it easier to support each other. Generally, there seems to have been a shift from local groups trying to fight their own battle to supporting other groups (regionally, nationally and internationally), making anti-fossil fuel not only a local but national issue.

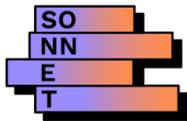
Greater connectivity and support for each other has also contributed to being able to fight anti-fossil activities based on climate change grounds. For example, whilst several years ago, planning applications were won on local grounds such as issues related to noise levels and road infrastructure, it seems that more and more UK climate change targets could become a determining factor (but this still is to be seen). At the moment, this only is the case for coal (but not anti-onshore oil and gas).

A lot of the anti-fossil fuel activities mentioned in this report occur in spaces where people's identities are connected to a sense of place: students and their university and local residents and their village. This can ease the mobilisation of people for the campaign and create longevity. Some network organisations have played a key role in making local actions visible to a regional and national audience. Moreover, resources can be more easily pulled together when several local organisations group together as a network. Other network organisations also take intermediary roles i.e. they support networking events and conduct advocacy work (representing several local groups).

5.2.1.4 How can the interactions/ relations between SIE-field-actors and/ or other field-actors be characterised (e.g., cooperation, exchange, competition and conflict)? How have they changed over time?

Within SONNET, the SIE-field 'framings against fossil fuel energy pathways' has been linked to a type of SIE that changes social relations in the energy system based on '**conflicts**' (rather than cooperation, exchange and competition). SIE-field-actors develop 'novel' ways of thinking about energy issues to stop particular energy pathways (see deliverable 3.1 for more information). Conflicts between some of the SIE-field-actors and other field-actors seem to be apparent in the case of anti-fossil fuel. On the one hand, there are SIE-field-actors, who oppose fossil fuel through lobbying, direct action, education, etc. and on the other hand, there is the fossil fuel industry, who put a lot of effort into creating favourable social, policy and regulatory environments so that they can conduct lucrative extractions. For some of the actors (e.g. judges), the story is probably not as black and white i.e. being for or against fossil fuel.

Researching the fossil fuel industry (and in particular anti-fracking), Brock (2020:2, drawing on the work of Mobbs 2013) has argued that 'fracking is embedded in a complex web of personal and institutional relationships and vested interests that transcend state institutions, fracking firms, and investors... Fracking opposition is fuelled by this display of corporate

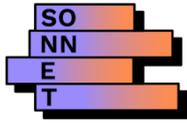


power, as well as disillusionment about the lack of democratic decision-making, resource control and the role of the police in protecting extractive interests'. A very similar argument has also been made by McWhirter (2015:89), a former resident and campaigner from Balcombe, 'we understand the opposition – the might and wealth of an oil and gas industry determined to prolong their dominion in the face of climate change. We have weathered misinformation in the right-wing press, and propaganda from a misguided government heavily lobbied and influenced by the oil and gas industry. We now face new laws that will speed up and facilitate permits for the industry, while removing individual and community rights; 'regulators' seemingly intent on pushing through government policy at all costs, ignoring the weight of the public opinion...' (McWhirter 2015:89). Several interviewees (in particular local residents near extraction and mining sites) pointed out that they started off looking at the industry with an open mind but as soon as they had conducted more research on the topic and tried to engage in lobbying activities, they wanted to take action against the industry (Interviewee 3,6,8). One of the interviewees talked about how she lost faith in the media, authorities and government through getting involved in the activities (Interviewee 8). It might be possible to suggest that some of the social interactions between SIE-field-actors and other field-actors have become more entrenched over time.

As pointed out in section 5.1.1.3, social interactions between SIE-field-actors and some of the other field-actors can also be based on cooperation and exchange. During the fieldwork, some of the interviewees also talked about how the relations between SIE-field-actors (in particular between local groups and residents) are sometimes being portrayed as hostile. For example, some people have drawn boundaries between local residents (the ones who welcome 'activists' and the ones who do not) and incoming 'activists' from national campaign organisations. Whilst conducting the fieldwork, however, interviewees argued that these boundaries are often used by the national media, policymakers and industry actors to create divisions between SIE-field-actors. For example, a common misconception has been that protests have mainly been organised by incoming campaigners rather than local residents. Most of the interviewees, who considered themselves as campaigners, felt that diverse people get involved. Some of the interviewees said that through getting involved in anti-fossil fuel activities they have met people (or people had come into their life), who they would not have met otherwise, which had a profound influence on their life (e.g. Interviewee 7, 8). They created friendships for life that they would not otherwise have had. The portrayal of social interactions between actors can therefore be used as a divisive tool to amplify differences between people who get involved in direct action and campaigns. It also shows that SIE-field-actors are not a homogenous group. More often as part of the fieldwork, SIE-field-actors recognised these differences and respected each other's differing aims, activities and strategies to get involved in 'framings against fossil fuel energy pathways'.

5.2.1.5 What is 'socially innovative' about the SIE (including SIE-initiatives and/ or SIE-field-actors)? How and to what extent do which ideas, objects and/or actions demonstrate a change in social relations and new ways of doing, thinking and/or organising energy?

In SONNET, we define an SIE as 'a combination of ideas, objects and/ or actions that change social relations and involve new ways of doing, thinking and/ or organising energy'. The SIE linked to this SIE-field is based on different framings derived from different groups and organisations (but also includes protesting and lobbying work) that broadly aim to 'stop' the fossil fuel energy pathway. In the SONNET typology, this SIE has been categorised as changing social relations through conflicts (see also section 5.1.1.4) and involving new ways of thinking about energy. 'Framings against fossil fuel energy pathways' have a long history in the UK, it might therefore be difficult to determine what and how these framings are **socially innovative** today. Still, as argued by Brock (2020:1) people involved in 'framings against fossil fuel energy pathways' have had to be inventive, resilient and persistent over the past years because of powerful state and energy companies' efforts 'to facilitate the suppression of protest' and the activities of SIE-field-actors. This argument probably addresses the core of what is innovative about this SIE i.e. being able to adapt to and trying to change a shifting



social, political and economic context in which the fossil fuel industry tries to continue its activities and control/ contain the activities of SIE-field-actors.

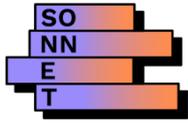
Within these developments, SIE-field-actors have had to develop novel (or adaptive) strategies, activities and narratives that enable them to achieve their overall aim of ‘stopping’ the activities of the fossil fuel industry (either locally, regionally and/ or nationally). It is this adaptability to changing (and often unfavourable) conditions that makes these activities ‘novel’. For example, the case study has shown how campaigns had to change after the UK governments new definition of ‘fracking’ came into effect. In some places in the UK, anti-fracking had to be re-framed to become anti-acidisation and/ or anti-onshore oil and gas because of the UK government’s narrowing of the ‘fracking’ definition. It shows how the term ‘fracking’ has been highly politically contested. At local extraction sites, this has meant that actors had to re-frame existing campaigns (maybe with less straightforward messages) and make up new posters (whilst old ones with the word fracking could no longer be used).

To sum up, SIE-field-actors had to be pretty inventive, flexible and resilient over time, considering the efforts by the fossil fuel industry (and UK government) in trying to control the discourse and resistance against onshore oil and gas in the UK. Moreover, it is the increasing mobilisation of people and local groups beyond particular sites and/or activities that seems to have characterised the developments of ‘framings against fossil fuel energy pathways’ over the last years. Local groups have created their own regional networks. Moreover, they have created connections with national intermediaries and networks across regional borders. Ways to, for example, object planning applications, set up a ‘winning’ campaign, and win court cases have been found and widely shared with other groups and network. Moreover, the activities at particular sites have managed to make their stories and experiences heard more regionally and nationally, having a wider influence on the public discourse of fossil fuel technologies. This was also supported by a wider acknowledgments of climate change issues in the UK (and the need to discuss the role of fossil fuels within them).

5.2.1.6 How has the SIE developed over time (and space)?

Framings, in particular, for anti-onshore oil and gas have been widely documented in the UK within the academic literature – a summary of some of these framings can be found in the case study report. Within SONNET, we look at ‘framings against fossil fuel energy pathways’, this includes framings (i.e. the content, construction and performativity of these framings) derived from anti-coal groups, anti-onshore oil and gas activities and the divestment movement over a ten year period. It was out of the scope of this work to conduct an analysis of the development of particular discourses and how they changed over time across these groups and movements, seeing that each has its own very particular (and sometimes differing) campaigns (and framings). The **development of the SIE** therefore focuses on what has been described as ‘innovative’ about the SIE i.e. adapting to a changing political and social context and increasingly mobilising whilst connecting to broader climate change issues. A summary of this history and changes over time is outlined below:

Around 2010, some new anti-fossil fuel campaigns emerged in the UK: anti-fracking and anti-investment into fossil fuels (i.e. divestment), mobilising diverse people and groups. Other anti-fossil fuel campaigns that have had a longer history in the UK continued during this time. In the period between 2013 and 2014, several local anti-fossil fuel groups emerged and developed in rural areas where oil and gas companies started to gain planning permission to do their exploration work. Local groups also started to form at universities where student groups tried to persuade the management group to divest from fossil fuels. Groups had to come together, learn about anti-fossil industry and decide on how they would frame their activities and position themselves. Although some coal companies went into liquidation, local groups needed to continue their work against new planning applications for opencast coalmines. Local activities were supported by grassroots organisations and national NGOs. During this time, anti-fracking increasingly gained national media attention whereas the divestment movement and anti-coal activities, for different reasons, did not gain the same national media attention.



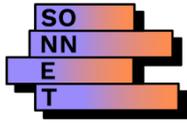
Looking at the second phase (2013 and 2014), some of the similarities between anti-fossil fuel activities become apparent. All of them seem to have a strong local and community base i.e. student and/ or resident groups that gain support from regional and national organisations, transferring knowledge and campaign tactics between groups. At the time, mobilisation surrounding anti-fracking and anti-coal is also based on an increasing industrialisation of the countryside with lasting environmental and health impacts for local residents. Some of the differences have also become visible. Around 2013, anti-fracking became not only a local issue but also a national one. This was not the case for anti-coal (and at the time, divestment). The coal industry was in decline. In addition, in comparison to Germany, for instance, coalmines were seen as ‘cute, they are tiny’ (Interviewee 2) in the UK. Still, there is a long legacy of coal mining in some areas of the UK (e.g. Yorkshire, Cumbria, Lancashire, Wales and the Scottish Central Belt), tying communities socially and culturally together. Occurring rather with the attention of the national media has also meant that anti-coal activities have been a ‘testing ground’ for several legal strategies, trying to ‘control’ the activities of protestors through law and police enforcements.

Around the middle of the 2010s, mobilisations around anti-fossil fuel continued in the UK. It also became a time that was shaped by national policy developments, in particular surrounding the Infrastructure Act (influencing the National Policy Planning Framework (NPPF)) and the UK government’s decision to phase out use of coal. Policies have been developed to ease fossil fuel activities and phase them out, whilst at the same time, increasing mobilisation developed to either stop fossil fuel activities i.e. emergence of fracking and slow phase out of coal extraction. But not all anti-fossil fuel activities needed to engage with the national policy developments. Even though, the divestment movement developed partly independently from national policy during this time, it gained more national media traction through some universities responding to the pressure derived from the activities. In order to marginalise the industry, the campaign involved targeting institutions that invested in the fossil fuel industry where no direct interactions with UK policymaking were needed (as argued by Interviewee 5).

Local protests intensified across the UK in the period of 2015-2018. Strategies against fossil fuels involved more and more engagements with national level developments, for instance, including responses against the government’s steps to ease the planning process for fracking applications and non-binary decisions for the phase out of coal. The divestment movement gained more and more national traction, including quite a few university decisions to divest. All these activities were supported by an increasing public awareness around climate change towards the end of this phase. Climate change rose up on the social, cultural and political agenda in the UK. The Paris Agreement has required actions to be taken to prevent global temperatures from rising by 2 degrees. Fridays for Future arrived in the UK and Extinction Rebellion was established in May 2018. Climate emergencies were declared by the Scottish parliament, National Assembly for Wales and Parliament of the UK (in addition to several councils). At this stage, these changes did not really influence the NPPF, which is key for anti-coal and anti-fracking, but influenced the public support against fracking and helped anti-coal campaigners to partly make a case against opencast coalmine on the basis of climate change.

During this time period, most anti-fossil fuel activities have gone through a refocus of activities and framings. For example, in 2015, most of the campaign posters that called for an end to fracking started to become irrelevant in parts of the country because some drilling projects no longer required fracking (according to the government’s definition introduced in the Infrastructure Act). In the case of anti-coal, the announcement of coal phase out meant that campaigns started to focus on ending coal now and prepare for anti-coal for steel production campaigns. In addition, the divestment movement had to diversify their targets and message. Wins linked to the divestment campaigns at universities meant that new targets needed to be found, e.g. banks and insurances companies. With the new targets, the campaigns also needed to change.

In 2020, it seems that campaigners engaged in anti-fossil fuel are to some extent at the crossroads. Although there have been several achievements: moratorium on fracking, coal phase out, net-zero carbon target, etc., the historical account



has shown that the work for campaigners is far from over. Campaigns needed to be refocused rather than stopped. The decision-making process, type of energy mix, technology deployed, etc. that will bring the UK to its net zero target by 2050 are already in discussion but there are still several questions left unanswered and it is to be seen whether the targets will be met.

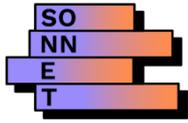
5.2.1.7 How/ to what extent do narratives and activities by SIE-field-actors and other field-actors refer to power issues and include ambitions to change them?

Not all of the **narratives and activities** derived from SIE-field-actors directly refer to **power issues** and ambitions to improve them. For example, for some of the local groups, it is more about stopping local fossil fuel activities rather than considering developments of the fossil fuel industry as an issue of power that needs to be changed in the UK. Power issues probably become most prevalent for SIE-field-actors, who start to research and engage with the political economy of the fossil fuel industry and/ or at protest sites. Researching the fossil fuel industry (and in particular anti-fracking), Brock (2020:2, drawing on the work of Mobbs 2013) has argued that ‘fracking is embedded in a complex web of personal and institutional relationships and vested interests that transcend state institutions, fracking firms, and investors... Fracking opposition is fuelled by this display of corporate power, as well as disillusionment about the lack of democratic decision-making, resource control and the role of the police in protecting extractive interests’. Activities that highlight these power issues can therefore be described as making institutions and invested interest transparent.

Several interviewees pointed out that they started off looking at the industry with an open mind but as soon as they had conducted more research on the topic and tried to engage in lobbying activities, they wanted to take action against the industry (Interviewee 3,6,8). This suggests that some SIE-field-actors move from locally getting involved to considering ‘framings against fossil fuel energy pathways’ activities as part of needing to change the energy industry, in particular fossil fuel industry. These moves can sometimes be signified by people first getting involved in writing objections about local fossil fuel developments and then later on being part of more nonviolent direct action against the industry and its practices.

5.2.1.8 What have been the (shared) narratives, activities, knowledge, learnt lessons, etc. between alliances/networks/collaborations of SIE-field-actors and/ or other field-actors? How have they been reproduced, adopted and replicated in the SIE-field? To which extent have they been legitimised and/ or contested by several actors within the SIE-field? Have there been any key changes over time (if so)?

We suggest that **networking and mobilising** are core activities of ‘framings against fossil fuel energy pathways’ alongside creating campaigns in the UK. There are diverse SIE-field-actors (e.g. NGOs, local groups, regional network organisations) and some of them have a long history in environmental campaigning, holding a wealth of knowledge and skills. Over the past ten years, SIE-field-actors have created **shifting alliances** around particular campaigns and protest sites. In particular, events have been organised at anti-fracking protest camps where several organisations, groups and residents have been able to come together. This is where skills, knowledge and strategies can regularly be shared and discussed between SIE-field-actors (not only at events but also at dedicated **training sessions**). In particular, the divestment movement has set up **manuals and guidelines** on how to mobilise groups and set up a local campaign. What is also worth mentioning is that some people who get involved in ‘framings against fossil fuel energy pathways’ have affiliations to several informal and more formalised organisations. It might therefore be possible to suggest that there are **well-connected informal networks** of SIE-field-actors and their organisations in the UK. Moreover, social media and SIE-field-actors’ websites have been a place where SIE-field-actors are able to support each other’s campaigns and activities and

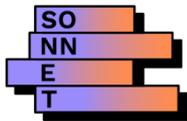


therefore raising their profile and reach. When starting to look at the activities of SIE-field-actors, it soon becomes apparent how well documented campaigns and activities are. Blogs and news are being regularly updated and a lot of SIE-field-actors carry out their own research into the fossil fuel industry and its technologies (and/ or consult people who do this work).

SIE-field-actors that mobilise around particular campaigns do not necessarily need to share the same narratives of change, motivations to get involved and aims around changing the energy system, seeing that they more often share a similar **common problem framing** and campaigns frequently are **time-limited**. Alliances can therefore be flexible and change over time. Mobilising around particular campaigns, court case and protest sites for actions can be seen as a key characteristic of this SIE-field. The divestment movement exemplifies this point. Several interviewees talked about the ‘clarity’ (Interviewee 3), ‘simplicity’ (Interviewee 10) and ‘tangibility’ (Interviewee 11) of the divestment campaign (and the arguments that it has been based on) and therefore its success. There was a ‘primary actor to blame’ (i.e. the fossil fuel industry) and key actors who can do something about it (i.e. organisations that invest in fossil fuel, e.g. universities). Similarly, the ‘Let Communities Decide’ campaign was a reaction to proposed changes of the UK National Planning Policy Framework. These proposed changes were considered to be problematic because they would have removed local decision-making about shale gas. It brought together campaigners and organisations such as Friends of the Earth, Frack Free United, 38 degrees and 350.org just to mention a few. Interviewee 5 explained how the divestment movement was really successful in unifying the climate change movement around their particular ‘clear’ campaign. But this ‘unity was temporary’ (Interviewee 5). For quite a few people in the movement, the divestment campaign was always meant to be a starting point for larger changes. The campaign was meant to call into question the social legitimacy of the fossil fuel industry to then create a favourable political climate for ‘more radical political interpretations of climate justice’ (Interviewee 5). For Interviewee 5, this would have entailed partly ‘resolving’ people’s political differences (e.g. how change comes about and should be governed) and ‘cohere around a deeper politics’, which has not happened yet.

Protest camps at particular universities and mining and extraction sites also present temporal spaces in which diverse people (e.g. students, residents, NGOs, grassroots direct actions groups) come together around a similar problem framings i.e. to stop the local fossil fuel activities. Potential conflicts (or better differences) can arise between different ways and strategies to stop the fossil fuel activities (e.g. lorry surfing, human chains, gathering objections for planning applications and engaging with local MPs). Sometimes these conflicts are framed around local residents who are against direct actions and incoming campaigner who are pushing for direct action. For example, a common misconception has been that protests have mainly been organised by incoming campaigners rather than local residents. When looking more closely such clear divisions are usually not apparent. One of the interviewees talked about how she did not get involved in direct action but rather wanted to inform her neighbours, object to planning applications, provide evidence at reviews, etc. (Interviewee 6). Still, it was more of a sense of ‘we got used to the protest’ rather than an ‘us and them’ attitude that was often taken. Some of people also move on to other protest sites and/ or travel the country to give talks and share experiences, tactics and strategies. Sites and places have therefore got a very particular role in ‘framings against particular fossil fuel energy pathways’.

Changes over time are characterised by possibilities to mobilise around campaigns and activities. This also partly depends on, for instance, policy (local and national) and industry changes. Anti-onshore oil and gas, anti-coal and divestment can ebb and flow, creating momentum and having to re-group (i.e. come up with new strategies). Over the last ten years, within the divestment movement, network and intermediary organisations have been created and manuals and guidance documents have been developed and shared. Similarly, the anti-onshore oil and gas movements emerged and gain momentum (probably being the strongest movement to be in the public eye). Lots of mobilising, alliances and networks have been created. In particular the events organised by the anti-onshore oil and gas have been spaces where the different anti-fossil fuel companies could come together and create stronger bonds. The anti-coal movement has the longest history out of all three and therefore longer standing intermediary organisations and local



groups (and national NGOs campaigning about the issues). Still, only over the last few years, local groups started to network more with each other, and the Coal Action Network became more of a network organisation rather than providing support to individual local groups.

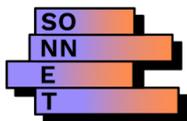
5.2.1.9 Reflections on the main research question (based on answering the minor ones)

There is one point that has not really been clearly outlined by answering the minor research questions that might help to provide a more in-depth answer to the major question: How have the SIE and SIE-field emerged, developed and institutionalised over time? More work needs to go into examining the boundaries of the SIE-field. It is still unclear whether anti-onshore oil and gas, anti-coal and divestment can be considered to be part of the same SIE-field in the UK. On the one hand, it might be possible to argue that some SIE-field-actors work across these three movements (e.g. Friends of the Earth) and sometimes events are organised where they come together and support each other. On the other hand, the policy, social and cultural context that co-shape the activities of the SIE-field-actors differs across these movements (see 5.1.2.5 for more details). In particular, the divestment movement sometimes feels like ‘the odd movement out’. Here, strategies, ways to mobilise and protest, sites of mobilisations, framings, etc. are quite different to anti-onshore oil and gas and anti-coal. But even, anti-onshore oil and gas and anti-coal have differing histories (in particular social histories) and policy context in which they develop their activities. When writing up the case study, there is a comparable aspect to the historical narrative in the case study that makes it sometimes sound like three separate movements rather than a SIE-field. This does not mean, however, that it is impossible to talk about a SIE-field if it becomes a conceptual tool rather than a boundary for an empirical narrative.

5.2.2 How do SIE-field-actors and other field-actor interact with the ‘outside’ institutional environment and thereby co-shape the SIE-field over time?

5.2.2.1 Which institutions (regulative, normative, cultural-cognitive) within the ‘outside’ institutional environment have shaped (including enabled/ impeded) SIEs and its SIE-fields (and how)?

Much could be said about the ‘outside’ institutional environment surrounding and penetrating ‘framings against fossil fuel energy pathways’. The UK government and fossil fuel industry (and their interlinkages) play a prominent role in **impeding** the activities that are part of the SIE-field and its SIE-field-actors, including a) ways to deal with an increasing public opposition (e.g. policing protestors and controlling discourses and knowledge (see Brock 2020)), b) buying public consent (e.g. corporate sponsorship and tax hand-outs (see Brock 2020)), c) ignoring some of the issues of local residents in areas affected by fossil fuel (in particular the coal regions in North of England), d) lack of legislated strategies to achieve climate targets (e.g. announcement of the coal phase out (without legislation), e) changing the definition of fracking and attempting to fast-track planning processes for the industry. In addition, ‘the country has seen a range of new police powers and criminal laws which helped redefine lawful and unlawful dissent, criminalising some forms of collective action while promoting forms of collective action that don’t threaten industrial activity’ (Brock 2020:10). One example of the criminalisation of some anti-fossil fuel activities has also been described in this historical account: the granting of injunctions. ‘At PNR [Preston New Road], for instance, the injunction outlaws’ direct actions including trespass, slow walking, lock-ons, obstruction of the highway, and lorry surfing’ (Brock 2020:11). Much more research can be found on this topic (e.g. Netpol). **Regulatory institutions** (e.g. rules, laws, policies, and standards) have played a key, but also norms and ways of working within the UK government.



Although the fossil fuel industry has tried to redefine their expected roles along policy changes over time, changing dominant social discourses (in particular surrounding the social legitimacy of the fossil fuel industry) and raising issues around who can take part in the discussion about the direction of the energy sector developments have been considered to be one of the main influences of anti-fossil fuel activities. This highlights that such shifts in social discourses can be considered to be **enabling factors** for the SIE and its SIE-field. For example, as argued by Bergman (2018:8), ‘One of the most important impacts of divestment has been changing public discourse. Issues of investments in fossil fuels have become more prominent on both political and financial agendas and divestment may have already had significant impact on public discourse around climate mitigation’. At the same time, an increasingly unfavourable public attitude towards shale gas emerged in the UK. In 2016, a leaked letter from three cabinet ministers to Chancellor George Osborne showed that the UK government was becoming worried about the public’s attitudes towards shale gas. The letter outlined strategies to overcome barriers to fracking operations, including attempts to create a more favourable public attitude (Brock 2020). Moreover, fracking operations often occurred in rural areas in the UK where the Conservative Party had some of their core base of voters. For some of the interviewees, it was no surprise that the moratorium on fracking came in just before the general election in the UK, considering that voters could have been lost to other parties (which started to more clearly take a stance against fracking). **Normative and cultural-cognitive** institutions have therefore played a key role.

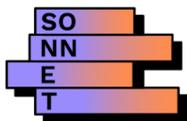
5.2.2.2 What are the key events, external shocks, trends and inter-field interactions that enable/ impede SIEs and its SIE-fields (now and in the past)

Some of the key events, external shocks, trends and inter-field interactions that have **enabled** the SIE-field over the past ten years are (this is not a comprehensive list):

Key events	External shocks	Trends	Inter-field interactions
SIE-field-actor going together to the COP21	Earthquakes that have been triggered by fracking	Coal companies going into liquidation	Rise of climate issue within wider public discourse i.e. Fridays for Future and Extinction Rebellion
Mobilising locally and creating protest camps (several events)		Rise of climate change issues	
Article written by Bill McKibben		More and more universities decide to divest	
University of Glasgow announced divestment decision – first university			
Challenges against Secretary of State in court on shale gas			
Local authority decisions to not approve planning applications for industry (several events)			

Some of the key events, external shocks, trends and inter-field interactions that have **impeded** the SIE-field over the past ten years are (this is not a comprehensive list):

Key events	External shocks	Trends	Inter-field interactions
Infrastructure Act being agreed upon and published		Coal companies going into liquidation	
Injunctions against campaigners being decided (several events)		Targeting campaigners as ‘domestic extremists’	



Local authority decisions to approve planning applications for industry (several events)		Vested interests that transcend state institutions, fracking companies and investors	
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Some of the key events, external shocks, trends and inter-field interactions that have not so clearly **enabled and/ or impeded** the SIE-field over the past ten years are (this is not a comprehensive list):

Key events	External shocks	Trends	Inter-field interactions
Decision to set and bring forward the phase out for coal		Calls for a Just Transition	
Recent moratorium on shale gas			

When looking at the list, it becomes apparent that most of the events, etc. are not shared between anti-onshore oil and gas, anti-coal and divestment developments. As previously mentioned, these connections happen more ad hoc and are often based on some SIE-field-actors having several affiliations to groups and organisations. What also becomes apparent is that inter-field interactions might have not played a key role. This might partly be due to the fact that anti-onshore oil and gas, anti-coal and divestment could be seen as separate SIE-fields in the UK (but are not conceptualised as such in the SONNET project).

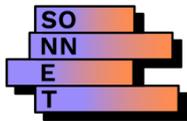
Looking at the list, events, etc. can also be categorised into a) SIE-field-actors’ events and campaigns, b) larger climate change events and activities, c) government policy changes and decisions, d) economic changes and geological occurrences, e) relations and alliances between other field-actors, f) legal actions from other field-actors, and g) planning application decisions.

These events, etc. are outlined and discussed in-more depth in the answers to the following minor research questions.

5.2.2.3 How (if so) have the SIEs and their SIE-fields and ‘outside’ institutional environment been shaped by these events, external shocks, trends and inter-field interactions (now and in the past)?

The **‘outside’ institutional environment**, in the case of fracking, was shaped by geological occurrences in the form of earthquakes due to the fracking process. The two moratoriums on fracking can mainly be explained due to these earthquakes. Over the past ten years, policy decisions (e.g. changing the definition of fracking) derived from the UK government creating a more favourable environment for the onshore oil and gas industry (partly being explained through long-term entanglements between the industry and governments). This was also supported by existing legal options and ways to police SIE-field-actors’ activities that make up the existing ‘outside’ institutional environment. It might therefore be possible to suggest that the ‘outside’ institutional environment (in particular due to changes in policies) has actively made use of and was shaped by some of the other field-actors to ‘control and contain’ activities of SIE-field-actors in the **SIE-field** to be able to support the industry. The SIE and SIE-field has therefore been shaped by these policies, regulatory, etc. events. Still, it was mainly the earthquakes that led to fracking activities being put on hold (it is important to mention that other onshore oil and activities have continued). In addition, the decreasing public acceptance towards fracking has also influenced the SIE-field (as outlined by some of the interviewees). Such changes in public discourse can partly be explained due to some of the SIE-field-actors’ activities (in particular some of the protest sites gained an increasing national coverage over the past ten years).

The decline of the UK coal industry has been a long-term political and in parts economic process in the UK. Under the Thatcher government, the demise of the coal industry was a political decision to actively decrease the power of the trade unions. It might therefore be possible to suggest that the ‘outside’ institutional environment has been shaped by



UK policy decisions over the last 40 years. Over the past ten years, the demise of coal can partly be explained due to the UK government's decision to set a date for the coal phase out. Still, this decision was not legislated and does also not include the more recent developments of coal or steel. This has meant that SIE-field-actors have to still 'fight' local decisions around opencast mining on a one-by-one basis (shaping the SIE-field).

The divestment movement gained momentum through more and more local activities, in particular, at universities over time. Such local mobilisations and increased activities at different sites really enabled the development of the SIE and its SIE-field. Most of these activities could happen under the radar of policies and regulations.

Climate change rose on the social, cultural and political agenda in the UK over the past five years, influencing the development of the SIE-field (including anti-onshore oil and gas, anti-coal and divestment). The Paris Agreement has required actions to be taken to prevent global temperatures from rising by 2 degrees. Fridays for Future arrived in the UK and Extinction Rebellion was established in May 2018. Climate emergencies were declared by the Scottish parliament, National Assembly for Wales and Parliament of the UK (in addition to several councils). Such changes can be seen as being influenced by SIE-field-actors' events and activities in turn they also shaped the SIE-field. For example, although climate change is not mentioned in planning decisions, it started to frame some decision-making surrounding anti-coal (this could be considered as initial changes within the 'outside' institutional environment).

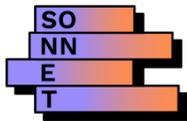
5.2.2.4 What have been the most important alliances/ networks/ collaborations of SIE-field-actors and/ or other field-actors that emerged from these events, shocks, trends, and inter-field interactions (when, how and for what reasons)?

Seeing that **alliances and collaborations** are a core activity to mobilise around campaigns against fossil fuel, this question is not straightforward to answer (see section 5.1.1.2). In particular, policy decisions (i.e. changes to the Infrastructure Act and definition of fracking) and fossil fuel industry activities (i.e. trying to gain planning permission for new extraction sites) have led to SIE-field events such as protest camps and demonstrations. These events have played a key role in creating alliances and future collaborations between SIE-field-actors. For the divestment movement, the announcement of more and more universities to divest spurred on more and more students to get involved. It was therefore the success of winning campaigns that encouraged further alliances, collaborations and activities over time. These activities were strongly supported by two national intermediaries.

Networks are created not necessarily based on particular events, etc. but rather when SIE-field-actors feel the need to share ideas and support each other more formally. For instance, regional network organisations around anti-onshore oil and gas have been created to pool resources, share information about the local fossil fuel industry, and support each other's campaigns and activities. Other network organisations have a longer history and play more of an intermediary role (i.e. helping to support local groups and residents to 'fight' a local industry actor). In how far networks exist depends more on the overall development of the SIE-field (rather than particular points in time) and activities of some of the other field-actors (e.g. UK government).

5.2.2.5 How has the SIE-field co-evolved with the policy context (if so) (and what was the relative importance of the urban, regional, national and European level)?

In the UK, several policy changes have occurred over the past years (e.g. deadline for the phase-out of coal and moratoriums on fracking) that could be interpreted as major achievements to stop fossil fuel extraction and consumption in the UK. The UK has introduced strict targets to reduce carbon emissions under the Paris Agreement, but also by its own legally binding Climate Change Act. The legislation commits the UK to reducing carbon emissions to



below 80% of 1990 levels by 2050. It still somehow feels unclear whether these policies and targets have led to the phase out of coal and moratorium on fracking.

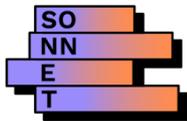
First, the phase out is not legally binding and second, it did not prevent the opening of new opencast coalmines (or extensions of projects). One of the interviewees argued that local resistance often is not acknowledged enough when talking about the reasons for the decision to phase out coal. The interviewee continued to explain that based on a more 'cynical' perspective the Conservatives (i.e. party that makes up the current UK government) could make the decision because they were not upsetting their core voting base with it (Interviewee 11). Moreover, it has become a policy that the Conservative Party 'rolls out every time, they get queried on their environmental credentials' (Interviewee 11). In addition, coal mining activities that are linked to coal for steel are not being targeted (and seem to be on the rise).

Several arguments have been made when trying to explain the reasons for the moratorium on fracking (also by some of the interviewees), for example, increasing public discourse (and actions) against fracking, persisting 'shocks' in the form of earthquakes i.e. industry causing seismic tremors and decreasing support for fracking within the UK parliament. Whilst discussing some of the arguments, it is important to keep in mind that a moratorium is a 'hold' on fracking (and not a decision to stop it). Moreover, the narrowing of the definition of fracking meant that most onshore oil and gas extractions do not fall under the moratorium. It might therefore be possible to argue that narrowing the definition of fracking and putting in a moratorium (rather than a stop) have also been ways to 'manage' the public discourse and ease processes for the fossil fuel industry. During the moratorium, the industry is able to develop the fracking technology (maybe without the scrutiny of the public) whilst continuing some of the exploration and extraction work that does not fall under the definition. Some of the policies (and/ or policy changes) that have been introduced over the past ten years have created favourable conditions for the anti-shore oil and gas companies (e.g. easing the planning process and re-defining the fracking definition).

The divestment movement developed in parts independently from national policy, it gained more national media traction through some universities responding to the pressure derived from the SIE-field-actors' activities and an increasing public discourse around climate change.

The role of the Secretary of State for Local Government and Communities within 'framings against particular energy pathways' demonstrates the entanglements between local and national decision-making processes. Over time, local authorities more regularly rejected planning applications for fracking activities (see, for instance, decision by Lancashire County Council). In August 2015, the UK government changed planning rules to allow the Secretary of State to make the final decisions on planning appeals on shale gas explorations and extractions, making it a national issue and being able to overturn local decisions. This decision set in motion the 'Let Communities Decide' campaign. Rather than advocating for decisions to be made locally, the anti-coal SIE-field-actors often appealed to the Secretary of State to overturn local decisions about planning application surrounding coalmines. Local authorities sometimes approved coalmining applications based on economic grounds. Considering the UK climate targets, SIE-field-actors were hoping that the Secretary of State would reject applications on climate grounds. Although several letters were written to the Secretary of State by the SIE-field-actors, nothing really happened. EU policy have probably played a role over the past ten years, but their role did not become apparent as part of this research.

Finally, it is important to mention that the policies on anti-fossil fuel are not the same across the UK. For example, Scotland has already introduced a moratorium on unconventional oil and gas developments in 2015 and confirmed its final policy position of no support in October 2019. Similarly, the Welsh government confirmed that fracking would not be supported in Wales in December 2018. For some more information see case study report.



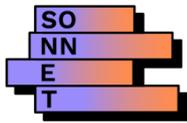
5.2.2.6 How are power relations (such as inequality, exclusion, oppression, exploitation, injustice) being transformed and/ or reproduced by the SIE-phenomenon under study? (and vice versa – how are SIEs enabled and impeded by power relations?)

In ‘framings against fossil fuel energy pathways’, power relations have been reproduced and transformed in the following ways (not comprehensive):

- Power relations between some of the other field-actors (i.e. fossil fuel industry) and some of the SIE-field-actors (i.e. direct action groups) have a long history in ‘framings against fossil fuel energy pathways. They are entrenched and get frequently reproduced through regular interactions.
- Time and resources are required to be able to get involved in ‘framings against fossil fuel energy pathways’ for longer periods of time. Most of the interviewees (in particular local residents) were retired or reduced their working hours when getting involved. Some of the SIE-field-actors move between protest camps. In addition to time and resources, a lot of emotional stamina is needed. This means not everyone can take part (similar to other SIE activities), producing some power relations.
- Over the past year, there was an increasing recognition of neocolonialism in European coal consumption (see for instance the activities derived from ‘Still Burning’, highlighting post-colonial entanglements). There seems to be an increasing recognition of power relations within global fossil fuel systems. It still is to be seen in how far these activities transform power relations.
- Some of the activities of the SIE-field-actors put into question ‘who is a campaigner’. Most of the interviewees, who considered themselves as campaigners, felt that diverse groups of people get involved. They often said that through getting involved in anti-fossil fuel activities they have met people (or people had come into their life), who they would not have met otherwise, which had profound influences on their life (e.g. Interviewee 7, 8). They created friendships for life that they would not otherwise have had.
- Anti-coal activities have become much more aware of the history of deindustrialisation of coal areas and its entanglements with local economic, social and cultural identifies. Local approaches to SIE-field-actor activities are therefore based on taking along the local community. This also includes deciding on strategies of taking actions against the industry and working with coal intermediary organisations (i.e. some of the trade unions). Past injustices against local coal communities are therefore more acknowledged. This can also be seen in the establishment of the Scottish Just Transition Commission.

5.2.2.7 Reflections on the main research question (based on answering the minor ones)

No additional reflections needed.



5.2.3 What are the enabling and impeding factors for the SIE-field-actors and other field-actors to conduct institutional work and change the ‘outside’ institutional environment?

5.2.3.1 How, why, and where do SIE-field-actors and/ or other field-actors conduct activities linked to creating, maintaining and transforming institutions?

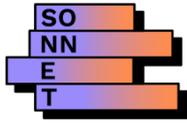
Institutional work refers to the activities of actors that aim to create, maintain and disrupt institutions. Examples: 1) Attempts to influence policy makers and the general public through direct lobbying, research reports, positioning papers, advertising, and the setting of technical standards and 2) Attempts to influence informal institutions, such as values, norms, binding expectations, common beliefs, habits, and routines, among the wider public (Arenas 2017). Diverse actors conduct institutional work, e.g., policymakers, campaigners, NGOs, energy industry.

Hopefully, the case study has given a good overview of the diverse framings created by anti-fossil fuel campaigners. As part of creating these framings, SIE-field-actors have been involved learning process, awareness raising activities, engaging with policymakers, lobbying and legal work, mobilising work, just to mention a few. Most of the interviewees talked about the diversity of the activities that they had to engage in and how these have transformed their lives, for example, having to regularly communicate to an often hostile press. It is not easy to single out different actions taken and demonstrate how they can be considered to be ‘institutional work’.

The SIE-field ‘framings against fossil fuel energy pathways’ makes visible that low carbon energy transitions are not only grounded in creating alternative relations, networks, technologies, etc. but also disrupting existing energy relations and systems. This might not be a new insight but what the historical account in the case study makes visible is that first, although the UK has ambitious climate targets, there still are discourses, regulations, policies and invested interests, keeping the fossil fuel industry alive in the UK and second, anti-fossil fuel activities have had to not only create framings surrounding technological replacements (i.e. renewables for coal) but also consider broader climate justice issues.

SIE-field-actors have been able to, for example, take legal proceedings in the courts, challenging decisions taken by, for instance, the UK government and individual injunction cases. Moreover, noise, water quality, etc. standards (often set by the Environment Agency) could be used to object **planning applications**, making measurement tools and experts essential in the campaign work. Currently, most of the objections to planning applications are still won based on local issues (i.e. noise, etc.) and technicalities (rather than on climate change grounds – this is slowly changing). For example, the planning application to frack at Roseacre Wood was granted on the grounds of potential traffic impacts. Still, the UK government’s climate change targets have meant that as part of court cases, planning applications, responses to consultations, arguments have emerged to stop particular fossil fuel activities based on climate change grounds. In a way, it might be possible to suggest that SIE-field-actors also maintain more newly developed institutions surrounding climate change by, for example, making a case for them in court cases. Mobilising financial resources, recruiting experts and researching the industry and its technologies, and gaining knowledge of the legal system have been key activities, skills and competences that groups needed to support and change existing regulative institutions. In particular some of the court cases have been key to slowly influencing the planning process. The existing regulative institutions have also been used by the industry to challenge planning decisions taken against extraction activities – maintaining institutions.

SIE-field-actors have been active in maintaining and creating institutions that are linked to the climate targets set by the UK government (and even press for more stringent targets) and try to transform institutions that can be argued to move away from these targets and/ or sustain ‘business as usual’ in the energy sector. It might be possible to suggest that the



combined anti-fossil framings have helped to shape the **public discourse** on anti-fossil fuel, in particular, raising the national attention on these issues through some of the activities, for example, anti-fracking protests at the Balcombe site. Such changes have been supported by larger climate change movements and their discourses i.e. Fridays For Future, as argued by some of the interviewees. For example, an increasingly unfavourable public attitude towards shale gas emerged in the UK. In 2016, a leaked letter from three cabinet ministers to Chancellor George Osborne showed that the UK government was becoming worried about the public's attitudes towards shale gas. The letter outlined strategies to overcome barriers to fracking operations, including attempting to create a more favourable public attitude (Brock 2020).

In addition to maintaining favourable institutions, in a way, it might be possible to argue that the fossil fuel industry had to lobby for the creation of institutions to 'control' the anti-fossil fuel activities (i.e. fast-tracking the planning process). Institutional work was therefore conducted on both sides. Moreover, within a changing energy system, the fossil fuel industry has had to redefine their expected roles over time. Interviewee 1 explained how parts of the fossil fuel industry had to change their arguments for the need for fossil fuel (and therefore their role), from bringing down gas prices to providing energy security to more recently arguing that from a climate point locally sourced oil and gas has a lower carbon footprint (Interviewee 1).

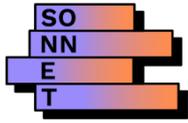
5.2.3.2 Who is involved in conducting institutional work (and who is not)? Which actors benefit from this work (or not)? How does this shape the SIE-field?

As can be seen from section 5.1.3.1, most SIE-field-actors and other field-actors get involved in maintaining, creating and transforming institutions. Seeing that most SIE-field-actors share a similar aim to delegitimise and/ or stop fossil fuel activities (but differ on how this should happen, at what speed, etc.), any activities towards these aims somehow directly or indirectly benefit other actors. Even though, some SIE-field-actors might not engage in direct action, they sometimes (not always) recognise its benefits. Anyone can take part in anti-fossil fuel activities. Still, as outlined above, a lot of time and resources are required to do so. Time and resources are not equally distributed, which makes it near to impossible for everyone to participate.

5.2.3.3 What have been the most important activities linked to creating, maintaining and transforming institutions? Outline these activities through describing 2-4 examples.

Several activities could be discussed here (see section 5.1.3.1), the three examples have been chosen based on the following criteria: diversity (who conducts the institutional work, practices of institutional work, types of activities involved and whether it had the desired impact (or not)) and achievements (i.e. having at least two examples that seem to have changed the 'outside' institutional environment). The examples are not in historical order.

Example 1 Judicial review by Claire Stephenson – example for maintaining/ transforming institutions: In July 2018, the revised National Planning Policy Framework (NPPF) was published. It required 'English councils to recognise what are described as the benefits of onshore hydrocarbons, including shale gas, for energy security and transition to a low carbon economy. Councils are also required to 'put in place policies to facilitate their [onshore hydrocarbons] exploration and extraction' and 'plan positively for them'' (as reported by Hayhurst 2018). In August 2018, Leigh Day (a law firm), who represented Talk Fracking (anti-shale group) asked the Secretary of State to withdraw the paragraph on fracking in the Framework (i.e. recognition of the benefits of onshore hydrocarbons). They made the argument that the revised NPPF did not take into account the greenhouse gas emissions from fracking, measuring methane releases and impacts on air quality. Moreover, the revised NPPF was not in line with the government's Clean Growth Strategy that was published in 2018. In December, Friends of the Earth and Talk Fracking (through its member Claire Stephenson)



sought judicial reviews of the revised NPPF in the High Court. In March 2019, the High Court ruled on the two challenges to the NPPF, one brought by Friends of the Earth and the other by Talk Fracking. Talk Fracking's case won. It focused on a specific policy of the NPPF: its approach to planning for shale gas and oil extraction by mineral planning authorities (see case study for more details).⁴

Example 2 Activities at the Pont Valley opencast coalmine – example for attempting to transform institutions: The long history of anti-coal and the multiplicity of activities to stop the industry (and vice versa) can be exemplified by what has happened at the Bradley mine in the Pont Valley area (Durham, North England). The area has been recovering from the loss of jobs caused by the closure of the deep pits over the past decades, but opencast coal mining has continued.

The local community has fought to stop coal mining in the area over 50 years, trying to object to several planning applications. Over the last decade, the UK Coal's application to Durham County Council for the Bradley mine was unanimously rejected in 2009. Local people had formed a community group, The Pont Valley Network, and the associated No Opencast Today or Tomorrow (NOTT) campaign to fight the application. They were supported by the Coal Action Network (i.e. grassroots campaigns to stop coal mining). UK Coal appealed the Council's decision which led to a three-week public inquiry in October and November 2011. Following the inquiry, the inspector upheld the council's decision, but UK Coal refused to take no for an answer and appealed to the high court in June 2013. The high court overturned the inspector's report leading to another three-week public inquiry which took place in October 2014. Both appeals were attended by local people who spoke out against the mine.

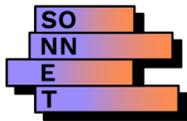
In June 2015, the company gained permission to mine the site, despite UK Coal becoming insolvent during the application processes (Coal Action Network 2015). Nothing happened for several years. In 2018, Banks Group acquired the mining rights won by the liquidated UK Coal. The Campaign to Protect Pont Valley teamed up with national and international activists to continue the campaign which mixed direct action with political lobbying and legal challenges, whilst setting up the Pont Valley Protection Camp (including skill sharing activities). A petition signed by over 80,000 people was sent to the Secretary of State, Sajid Javid, but received no response.

Nonetheless, the 500,000 tonne Bradley coal extraction site went ahead (even though the UK government announced the intention to phase out coal in 2015). At the time, campaigners tried to slow down Banks' preparation work on site through, for instance, continuous lock-ons and human chains because the company's planning permission was due to run out in June 2018. Although the coal company was not able to complete the work, the council decided not to enforce the planning restrictions.

Over the whole period, campaigners also tried to make a case for the protection of the habitat of the great crested newts (i.e. a protected species) that was found on site but with little success (leading to a civil court case against the coal company in October 2018). However, the work at the coal mining site went ahead. Over the past two years, the campaign went on to prevent further planning permissions for the extension of the mine. In June 2020, Durham County Council received more than 5000 objections and councillors objected to further extension plans. The company has not appealed the decision.

Example 3 Introduction of the Infrastructure Act – example for creating/ maintaining institutions: The Infrastructure Bill received Royal Assent to become the Infrastructure Act on the 12th of February 2015. The act has made significant and specific changes to planning consent regimes for fracking (i.e. with the aim of easing the planning process) (Cotton 2017). The legislative aim of the Act continued a planning policy agenda that began under the former Labour

⁴ For more information see: <https://www.leighday.co.uk/latest-updates/news/2019-news/governments-fracking-policy-ruled-unlawful/>



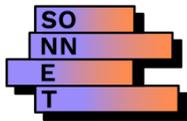
Government with The Planning Act 2008 and continued under the Conservative-Liberal Democrat Coalition Government with the Localism Act 2011. “These policy instruments have been developed against a background of long-running and antagonistic public inquiries which delayed the construction of major infrastructure projects...” (Cotton 2017:188) (for more information see case study report and Cotton’s paper). For example, the new Act has seen national parks and groundwater protection zones at risk from fracking as a result of government backtracking on amendments previously agreed to under the Infrastructure Bill – these aimed to increase the safety of hydraulic fracturing for shale gas. Last-minute additions to the Bill also saw a new definition of fracking enter the statute books.

5.2.3.4 What forms do these activities linked to maintaining, creating and transforming institutions take (e.g. emotional work, boundary work, strategy work, practice work and/ or values work)? [Link back to the 2-4 examples](#)

Example 1 Judicial review by Claire Stephenson – example for maintaining/ transforming institutions: This might be a good example of how SIE-field-actors maintain institutions in order to ‘transform’ them. The UK government has set some ‘ambitious’ climate targets. What these targets mean in relation to different energy policies still seems to be ambivalent. For example, over the few years, this did not mean that all types of fossil fuels are no longer supported and/ or put into question. It is partly up to the SIE-field-actors to make this argument and provide the evidence, and as in this example, through a judicial review process. It is about ‘maintaining’ climate laws to be able to ‘transform’ fossil fuel regulations and laws. This form of work has similarities to ‘practice work’ (i.e. efforts to affect the recognition and acceptance of sets of routines, rather than their simply talking about/ engaging in those routines), but rather than talking about routines, this example is more about how to meet targets that are partly set out in laws.

Example 2 Activities at the Pont Valley opencast coalmine – example for attempting to transform institutions: Several activities are being conducted as part of the Pont Valley campaign: protesting (e.g living in camps and creating lock-ons), objecting planning applications, speaking at public inquiries, running petitions, and organising around court cases. This has included ‘emotion work’, dealing with wintry conditions at the protest camp, ‘discursive work’, ‘meaning work’, and ‘strategic work’, collaborations between local campaigners and residents and incoming campaigners and coming up with shared strategies on how to ‘fight’ the company, and ‘interaction work’, collaborations between several SIE-field-actors. This example is interesting because it shows how many different forms of work are conducted and not always with the desired outcomes (i.e. stopping the extension of the coalmine). Moreover, it shows that although, local regulations might be on the SIE-field-actors side, they are not always necessarily ‘followed’ by the other field-actors. Politics plays a key role here.

Example 3 Introduction of the Infrastructure Act – example for creating/ maintaining institutions: This might be an appropriate example to illustrate that other field-actors also conduct institutional work and, in this case, the UK government creating institutions (i.e. a new law) to ‘shape’ the ‘outside’ institutional environment. This is partly also based on the government’s support for onshore oil and gas over the past ten years (and therefore existing institutions that support new ones). The form of work that the UK government conducts can be described to be ‘boundary work’ i.e. through redefining the fracking (narrowing it), it was possible to continue some of the oil and gas explorations and extractions even when the moratorium came in.



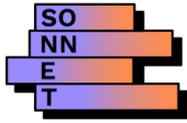
5.2.3.5 What factors have enabled and/or impeded institutional work? E.g. Resources, learnt lessons and competences connected to actors/ alliances/ networks/ collaborations. [Link back to the 2-4 examples](#)

Resources for anti-fossil fuel activities are scarce in comparison to the fossil fuel industry. Local groups, grassroots networks and NGOs alike heavily rely on fundraising activities to pay for their activities. In particular, some of the legal actions involve extremely high costs. Capacity building seems to be one of the core activities in the groups, often being described as a steep learning curve that they had to go through. A lot of the local capacity building on the ground is supported by regional and national organisation (e.g. Friends of the Earth and People and Planet). Sometimes, this happens through regional contact points, other times campaign manuals have been created that can be followed. Time, social connectedness and emotional stamina seemed to be key. Quite a few people, who got involved were retired, students or employed by an organisation. This was not the case for everyone; others gave up parts of their work and started to work part-time. At the beginning, they did not probably think that it would come to this. But some interviewees talked about how the more they uncovered about the industry and their practices and the UK government's reactions to it, the more they wanted to stop it and spent more and more time and energy to do so. Moreover, they got contacted by other groups to talk about their experience and other activities emerged that needed to be done. Coming back to the three examples, the following factors enabled and/ or impeded institutional work:

Example 1 Judicial review by Claire Stephenson – example for maintaining/ transforming institutions: These issues were not really discussed with the interviewees (also none of the actors who were part of these activities have been interviewed). It might still be possible to suggest that the existing judicial review system in the UK and a strong NGO landscape has helped SIE-field-actors to conduct this institutional work. Several judicial reviews and court cases have been attempted against the fossil fuel industry, a few have not been successful. A lot of financial resources need to be gathered to attempt such work (although the UK has also got a 'well-working' pro bono lawyer system). SIE-field-actors have been rather inventive to fundraise money (e.g. funded walks and auctioning the work of local artists). It is time consuming to collect the evidence, research the case and work with a law firm.

Example 2 Activities at the Pont Valley opencast coalmine – example for attempting to transform institutions: Factors that have enabled attempts to conduct institutional work: a) active and well-resourced SIE-field-actors (and well connected), including supportive national intermediary organisation (i.e. Coal Action Network), b) recognition to collaborate with coal trade unions, etc., on issues around coal, and c) SIE-field-actors who are willing to keep engaged over long periods of time, giving several resources to these activities. Factors that have impeded this work have been: a) lack of national recognition of local coal protests, b) local economic case around coal activities (supportive local authority), and c) coal phase out not being legislated.

Example 3 Introduction of the Infrastructure Act – example for creating/ maintaining institutions: The UK government (Tory/ Conservative) won the parliamentary vote on its proposal to regulate fracking by 257 to 203. Many MPs were critical that they had only one hour to discuss the issue and there was no time to vote on other amendments. For some, the set of conditions were too weak. Still, the Bill went through and became an Act. The Tory government strongly supported the industry over the past ten years. The other parties (except the Green Party) did not take a particular clear stand on fracking, this only happened a few years later. To sum up, at the time, Westminster supported (or better did not necessarily oppose) onshore oil and gas. This enabled the creation of new institutions that favoured the industry activities. Still, SIE-field-actors conducted several activities that opposed these developments, but at the time, it did not necessarily impede the development of the Act.



5.2.3.6 What have been intended and unintended effects (i.e. contributions) derived from conducting institutional work? What influence have they had on SIE-field and ‘outside’ institutional environments? Link back to the 2-4 examples

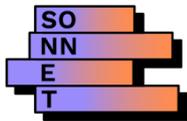
Example 1 Judicial review by Claire Stephenson – example for maintaining/ transforming institutions: In December, Friends of the Earth and Talk Fracking (through its member Claire Stephenson) sought judicial reviews of the National Planning Policy Framework (NPPF) in the High Court. In March 2019, the High Court ruled on the two challenges to the NPPF, one brought by Friends of the Earth and the other by Talk Fracking. Talk Fracking’s case won. It focused on a specific policy of the NPPF: its approach to planning for shale gas and oil extraction by mineral planning authorities (see case study for more details). This decision meant that future planning applications for fracking have been able to be objected to on current scientific evidence, especially about climate change, as opposed to government policy insisting on the need for oil and gas extractions for energy security.

Example 2 Activities at the Pont Valley opencast coalmine – example for attempting to transform institutions: The campaign has now successfully stopped the spread of opencast coal from Bradley in the Pont Valley. Campaigns continue in the area due to further planning decisions for local opencast coalmines. The local groups have therefore become increasingly more networked. Although ‘the Bradley campaign raised the profile of campaigns against opencast coal mining in the UK’ (Coal Action Network website), it did not gain much publicity in the national press (Interviewee 2). As argued by Interviewee 2, ‘there’s also coal happening in the UK which is something hardly anyone talks about in the overall energy mix because coal is so small now, but they’re still pushing to open up new opencast coalmines’.

Example 3 Introduction of the Infrastructure Act – example for creating/ maintaining institutions: The impact of the Infrastructure Act (2015) introduced by the UK government on existing onshore oil and gas developments can be exemplified by what happened after the Act was passed in the Weald area, South East England. In the Act, fracking in the UK got redefined in the new law as ‘the injection of more than 1,000 cubic litres of fluid at each stage (or expected stage), or the injection of more than 10,000 cubic litres of fluid in total’ (Infrastructure Act 2015). In the Weald area (including the Isle of Wight) the new definition of fracking meant that from the moment it was passed, some onshore oil and gas developments no longer fell under fracking regulations. Although the change of the definition already had a huge influence on some of the campaigns in the UK from 2016 onwards, the moratorium on fracking made the impact of the UK government changing the definition even more visible. In March 2019, the UK government’s plan to fast-track planning decisions on fracking was discussed in the House of Commons. A few months later, MPs still waited for a decision on it, but nothing happened. At the beginning of November 2019, the UK government ordered an immediate moratorium on fracking in England. Soon after the moratorium was announced, several organisations pointed out that it did not apply to all forms of onshore oil and gas exploration and extractions. All of the poster, information leaflets, etc. that mentioned the word ‘fracking’ had to be changed. For example, the ‘Frack Free Isle of Wight’ group needed to rename itself to ‘Don’t Drill The Wight’, whilst planning applications for onshore oil and gas explorations could continue in the area. For more details see that case study report.

5.2.3.7 Reflections on the main research question (based on answering the minor ones)

No additional reflections needed.



5.3 Case study 2: Local electricity exchange

5.3.1 How have the SIE and SIE-field emerged, developed and institutionalised over time?

5.3.1.1 What are the relevant SIE-field-actors and other field-actors within the SIE-field and what are their roles within the SIE-field? How have these changed over time?

LEE (and P2P electricity trading) is at the early stage of development. It has been evolving in the UK/GB in recent years, with several examples of successful projects and trials across the country that represent different models and innovative approaches to LEE. The SIE-field is characterised by technological changes (e.g. blockchain technology) and a reconfiguration of social relations. This suggests a growing role for local authorities (attempts to become energy suppliers), community groups and citizens/prosumers, but is also affected by changing roles of some traditional actors in the electricity market (e.g. DNOs turning into DSOs). The **key actors** are suppliers of renewable energy (including CE groups), consumers, DNOs, tech companies (platform providers for P2P trading), Ofgem (a regulator), local authorities, not-for-profit organisations (representative bodies in the CE sector or organisers of campaigns), and researchers/academics involved in some experimental and/or collaborative projects.

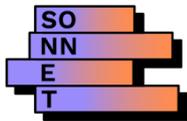
During the period covered in this study several **new actors** entered the electricity market experimenting with various approaches/models trying to match local supply with local demand (including local authorities, community groups and tech companies). The traditional actors have been actively involved in the development of the SIE-field and started developing new propositions for LEE (e.g. energy suppliers). As such, one of the most noticeable changes is the emergence of different models for enabling LEE and P2P electricity trading that are developed and implemented by different actors in the SIE-field. Some of these actors are represented in Ofgem's sandbox trials and other projects led by community groups and industry actors.

5.3.1.2 What are relevant activities, aims/goals and narratives that have been developed and manifested by SIE-field-actors and/ or other field-actors within the SIE-field over time?

The **main activities** in the SIE-field are concentrated around developing and implementing LEE initiatives, including experimental projects and trials (e.g. these often involve overcoming existing barriers and challenges to realising projects, conducting various promoting activities e.g. related to recruiting participants for the schemes); lobbying activities (e.g. for regulation change); collaborations and research activities around LEE.

The **aims** of the SIE-initiatives and other activities related to LEE are to achieve a greater penetration of renewable energy into current energy systems and to reform an electricity market, which used to be seen in the UK as an area monopolised by big industry players. Although what constitutes local electricity exchange and peer-to-peer electricity trading, and what is qualified as 'local' in electricity exchange is subject to interpretations, the overall aim – to maximise local usage of locally produced energy – is less contested and recognised by majority of actors as legitimate.

As the SIE-field-actors and other field-actors are very diverse, with different amount of power and resources, it is not surprising that their views on the aims and role of LEE/P2P can differ. Some have a more market-oriented view (especially commercial actors), others see LEE as an opportunity for citizens and local communities to benefit from those initiatives (including non-financial benefits like community cohesion or elevation of fuel poverty).



5.3.1.3 What types of interactions/ relations exist between SIE-field-actors and/ or other field-actors? What types of informal and formal alliances, networks, collaborations have existed (and possibly still do)?

Although traditionally electricity trading would involve at least two parties – a supplier and a consumer (relations based on bilateral arrangements), local electricity exchange (LEE), peer-to-peer (P2P) trading and particularly local energy markets (LEM) often rely on **multi-actor collaborations**. Some SIE-initiatives provide examples of such collaborations: Ofgem’s sandbox trials involve tech companies such as Verv, community energy organisations e.g. Repowering and energy companies e.g. British Gas/Centrica, EDF, BP.

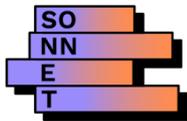
Local Energy Oxfordshire (LEO) project is led by Scottish and Southern Electricity Networks, which is community centric and takes a DSO approach to implementing new energy projects across Oxfordshire. It aims to create a local energy marketplace which will enable virtual aggregation of electricity loads, their flexible dispatch and local P2P trading. The list of project partners includes University of Oxford, Piclo, EDF, Local Carbon Hub, Oxford City Council and Oxfordshire County Council and some others.

Another initiative, Wadebridge Renewable Energy Network (WREN), is looking to collaborate with Co-op Energy (and Octopus Energy behind them) for Energy Equality project. Octopus would be doing trading and covering all Ofgem regulations, WREN will be working with Co-op energy to set up a structure of the tariffs. The local authorities play a supportive role, e.g. by providing a lease agreement for rooftop spaces owned by Cornwall council or Wadebridge Town council; they are also asked to sign up and buy energy that is being generated by local community.

The emergence of **new (multi-actor) alliances** because of increased collaboration involving the public, private and community angles is one of the main characteristics of the SIE-field. The boundaries of the SIE-field are being actively negotiated and re-drawn as new actors are entering the scene and forming partnerships with more traditional players (e.g. DSOs/DNOs, utilities or local authorities) and newcomers (technology companies such as digital platform providers). For most community actors and local authorities’ partnerships with energy supply companies and DSOs would be essential for implementing local electricity exchange initiatives. As a result, new propositions for local/regional production, distribution and trading of electricity are being discussed, tested and in some cases implemented. However, different category of actors may attribute different meanings and values to emerging practices around LEE.

There were no new **formal networks** observed in the case study, however some existing networks in e.g. CE sector or in electricity markets have some relevance to this SIE-field.

The study also revealed some **contestations** between SIE-field-actors. The main contestations in LEE are happening around policy and regulatory framework. The most controversial issue is the network charges which sparks debates between those actors arguing for regulatory changes (e.g. supporters of the Local Electricity Bill suggesting proportionate charges) and those who do not see it as a working mechanism considering the complexity of energy system. These debates, as well as other contestations in the SIE-field, illustrate some differences between those who ought to consider the interests of all consumers and the ‘bigger picture’ (actors with responsibilities beyond localities/regions e.g. operating nationally or overseeing the GB regulatory framework), and those pursuing a more ‘local’ agenda, e.g. in the interests of communities that have interest, capacities and resources for participating in LEE. The campaigns with a potential significant impact on LEE can bring together various SIE-field-actors and other field-actors (e.g. as supporters) providing the ground for forming alliances between them (e.g. as in Power for People campaign).



5.3.1.4 How can the interactions/ relations between SIE-field-actors and/ or other field-actors be characterised (e.g., cooperation, exchange, competition and conflict)? How have they changed over time?

In LEE social interactions (and changes to social relations) that aim to bring about changes in the energy system are often based on **exchange/doing** and to some extent on **cooperation**, rather than conflict or competition. It is possible that with the development of the SIE-field competition between actors will increase (e.g. between electricity generators or between intermediaries or between tech companies/providers of platforms for peer-to-peer trading – digital tools for electricity trading and creating marketplace for renewable electricity).

5.3.1.5 What is ‘socially innovative’ about the SIE (including SIE-initiatives and/ or SIE-field-actors)? How and to what extent do ideas, objects and/or actions demonstrate a change in social relations and new ways of doing, thinking and/or organising energy?

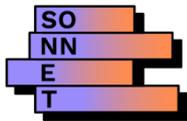
For the SONNET project, local electricity exchange as SIE-field is interesting because through exploring the approaches to LEE and interactions between various SIE-field-actors and other field actors it reveals several important issues for social innovation in energy transitions, such as **new actor constellations** and the **processes of institutionalisation** of the SIE-field embedded in the evolving context (the electricity market and policy). It is an emerging SIE-field which has not been institutionalised yet, and the study allows observing how the SIE-field is being shaped and the institutions ‘in the making’. LEE allows talking about the innovative approaches that aim to match local renewable energy generation with local consumption resulting in new business models and new forms of collaborations represented by some of the SIE-initiatives (e.g. P2P electricity trading) that also allow engaging people in energy transitions. In this case study social innovation lies in the emergence of ‘local delivery ecosystems’, which involves technological and business model aspects, but also a community engagement aspect.

5.3.1.6 How has the SIE developed over time (and space)?

Over the past ten years, the design principle of the GB energy system has been challenged with the rapid roll-out of decentralised generation. At the beginning of the period covered in this study (2015/2016), the supply market saw several new entrants including the CE sector and municipal energy companies. Many of them were interested in local supply and distribution of electricity or had it as part of their agenda. At the same time the idea of P2P electricity trading started getting its practical implementation.

Although LEE (and P2P electricity trading) is at the early stage of development and has a relatively short history, there have been several examples of successful projects and trials across the country that represent different models and innovative approaches to LEE. In the recent years there have been two trends in the (local) electricity exchange field: (1) solutions/propositions that would work within the existing regulatory framework (e.g. Energy Local, Smart Fintry, WREN and Ripple Energy),; and (2) experiments with new models using sandbox mechanism supported by Ofgem granting ‘exemption’ from current electricity market rules (Ofgem Sandbox P2P trials, e.g. Repowering which takes part in a trial delivered by Verv with British Gas/Centrica; the trial was set out to power a social housing community with solar PV using the energy trading platform, to help residents access the environmental and financial benefits of renewable energy).

Despite of the complexity and other issues (e.g. the use of new technology such as blockchain for P2P electricity trading, arguably the vested interests of tech companies, inclusion/exclusion i.e. who can meet the cost of participation, some



regulatory issues), P2P electricity trading is still seen as potentially having value for future energy systems. Reforms in market arrangements (the development of DSOs and new flexibility markets) may create an environment more conducive to P2P solutions (although P2P models will have to compete alongside other solutions to DSO system/network management). There could be some potential in developing P2P business models that would work at a level where profit margins would not be large enough for commercial enterprise to engage with.

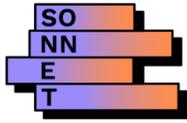
One of the questions to answer when thinking about the role that LEE, including P2P trading, will play in future energy systems, is how important local electricity is for most people in the UK. Local energy has some economic and environmental benefits (e.g. potentially lower tariffs and a choice of a supplier, support for local energy suppliers e.g. community groups, contribution to decarbonisation and decentralisation of energy) that cannot be ignored, and one of the reasons for people to support local energy is arguably the benefits for the wider community as well as individuals. But the complexity of the solutions can be seen as a burden and 'off putting'. Even the models that are showing signs to be very successful e.g. Ripple Energy and Community tariff, have limits in terms of number of people participating in those schemes. There is still a lot of uncertainty about the models of the future; their viability is to be proven and investments are needed for realisation of the projects.

5.3.1.7 How/ to what extent do narratives and activities by SIE-field-actors and other field-actors refer to power issues and include ambitions to change them?

LEE is an emerging SIE-field, and the power relations are evolving. It is expected that a push to transform the electricity market from centralised, supplier-centric structure towards more decentralised, consumer-centric structure can empower consumers/prosumers and other actors with limited power, making them active market participants with capability of trading energy and/or flexibility from their resources (Ibn Saif A. & Khadem, S. 2020).

During the period 2015-2020 the policy agenda for local energy turned the focus towards local authorities and local enterprise partnerships who were expected to work with and coordinate market actors in delivering energy services. This was also supported by some government funding programmes. Some initiatives by the local authorities (e.g. setting up energy supply companies) could be seen having an impact on power issues around energy supply as the new entrants offered an alternative to traditional energy suppliers. Although those initiatives were not successful in a longer term (see for example Bristol), the ambitions and willingness of some local authorities to play a greater role in LEE can have an impact on power relations in energy system.

Power issues become most prevalent for SIE-field-actors who are involved in the institutional work, and particularly trying to change/influence the policy and regulation in the SIE-field. Here the discourse is often in favour of empowering consumers and small actors such as local suppliers/CE groups. Although power issues are not always part of the narratives and activities of SIE-field-actors, there are ambitions to change how the electricity system operates. There is a belief that the scale is an issue for potential power shifts. For example, as discussed in relation to one of the SIE-initiatives (WREN), if successfully implemented LEE/P2P models are picked up by other community groups across the country, this would potentially bring them on one platform and e.g. allow them set up an energy supplier and become a more powerful player. Replications of other working/successful models e.g. such as Energy Local by CE groups/projects could also add more 'weight' to community/citizen-led initiatives and their role in a changing energy system.



5.3.1.8 What have been the (shared) narratives, activities, knowledge, learnt lessons, etc. between alliances/networks/collaborations of SIE-field-actors and/ or other field-actors? How have they been reproduced, adopted and replicated in the SIE-field? To which extent have they been legitimised and/ or contested by actors within the SIE-field? Have there been any key changes over time?

It is difficult to talk about shared narratives, activities, knowledge, and lessons learned, especially how they change over time, as the LEE/P2P as a SIE-field is still very immature and has not been institutionalised yet. The SIE-field lacks collective activities (except few collaborative projects perhaps) and is characterised by fragmented activities and a very limited number of initiatives, many of which are still only planned rather than implemented with particular results; it is probably too early to talk about lessons learned, although one particular narrative – about changing the existing regulation for development and realisation of LEE/P2P – has come through repeatedly.

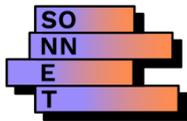
5.3.1.9 Reflections on the main research question (based on answering the minor ones)

It was problematic to define the boundaries of the SIE-field; there are several related phenomena that are part of the discourse around LEE but which are not included in this study (energy storage and flexibility/balancing services). An early stage of institutionalisation of the SIE-field means that not all questions about institutions and institutional work can be answered in full.

5.3.2 How do SIE-field-actors and other field-actor interact with the ‘outside’ institutional environment and thereby co-shape the SIE-field over time?

5.3.2.1 Which institutions (regulative, normative, cultural-cognitive) within the ‘outside’ institutional environment have shaped (including enabled/ impeded) SIEs and its SIE-fields (and how)?

For LEE the ‘outside’ institutional environment is characterised by the changing energy mix in the UK and the evolving energy system that include a growing number of distributed sources of electricity generation. In the energy system the fundamental changes include: the liberalisation of the electricity system; the need to decarbonise the electricity system because of climate change; the growing deployment of renewable energy technologies as costs have fallen. Besides, LEE and particularly P2P electricity trading, are instigated by technological developments – enabling technologies such as smart meters and blockchain technologies have opened possibilities for new business models. These changes seem to play an enabling role for LEE leading to a renewed interest in the local context and local energy supply/consumption. All of these imply changes in regulative (e.g. policy), normative (e.g. established practices of energy supply/trade) and cultural-cognitive (e.g. citizens’ perceptions and acceptance/resistance) institutions that constitute the ‘outside’ institutional environment for LEE. The energy market rules that existed/still in place create obstacles for LEE and hence are seen as an impeding factor. The current market arrangements have evolved and developed around the ‘supplier hub’ principle (electricity suppliers are the primary interface between electricity consumers and the electricity system), and the supplier’s role is now entrenched in regulatory frameworks, including licensing arrangements and industry codes (Judson et al. 2020). Some of them create barriers for local electricity exchange and P2P trading, e.g. the existing rules about customers being able to contract with only one licensed supplier at any one time. These legal arrangements block P2P electricity trading (which implies multiple, non-licensed suppliers/generators) and makes the P2P proposition



between generators and customers impossible to enact independently, since all transactions must be made through a third-party licensed supplier (Judson et al. 2020).

5.3.2.2 What are the key events, external shocks, trends and inter-field interactions that enable/ impede SIEs and its SIE-fields (now and in the past)?

The changing energy mix in the UK and the evolving energy system that include a growing number of distributed sources of electricity generation are the **main trends** that enable LEE as a SIE-field. Another important development is the emergence and adoption of technologies that make LEE and particularly P2P trading possible (e.g. smart meters and blockchain technologies).

Regarding **inter-field interactions**, LEE is closely linked with municipal energy and a CE phenomenon. The CE organisations across the country are searching for new solutions in order to enable and increase local electricity production, consumption and trading (ranging from new propositions for more established approaches e.g. microgrids to very new experimental models like P2P trading). There have been few examples of local authorities setting up municipal energy companies including ‘white label’ companies, despite of the barriers (i.e. related to engagement, policy/regulation, procurement rules, lack of resources). Some had a local supply element. Although not successful at the end, they represented the attempts of new entrants to the energy market, local authorities, to explore the ‘new territory’.

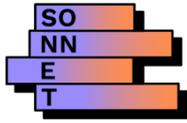
The evolving policy landscape – a shift in the policy discourse from CE to local energy – was probably an enabling factor for the SIE-field, although it meant ‘reduced support for grassroots, citizen-led action in favour of institutional partnerships and company-led investments’ and can lessen collective participation in energy transitions (Devine-Wright 2019).

Local energy markets and smart local energy communities emerging in response to the increasing decentralisation, digitalisation and decarbonisation of energy and supported by policy, can have a significant impact on the wider adoption and implementation of LEE and P2P electricity trading.

The **events** related to LEE such as seminars/ webinars/ conferences, launches of projects or programmes are not widely publicised and seem to be more ‘niche’ gaining attention of particular types of SIE-field-actors (e.g. network operators, researchers, CE activists). Few of them were attended by the researchers: a webinar to introduce the online version of Watts the Deal?, the board game developed at UCL to promote discussion of P2P energy trading (run as part of Community Energy Fortnight); an online seminar ‘Fighting for Local Power: how a UK Bill seeks to support local energy producers’ organised by SONNET partners; and Open Networks/ Flexibility Consultation Webinar organised by Energy Network Association.

5.3.2.3 How (if so) have the SIEs and their SIE-fields and ‘outside’ institutional environment been shaped by these events, external shocks, trends and inter-field interactions (now and in the past)?

The connection of the SIE-field (LEE) with the CE and local energy markets means new types of collaborations and partnerships (e.g. with licenced suppliers) for delivering LEE schemes, as well as new business models that could allow matching local renewable energy generation/supply with local consumption.



5.3.2.4 What have been the most important alliances/ networks/ collaborations of SIE-field-actors and/ or other field-actors that emerged from these events, shocks, trends, and inter-field interactions (when, how and for what reasons)?

The arrangements around electricity system and market are complex, and can perform as impeding factors for LEE (e.g. the electricity supply licence rules can be an obstacle for small generators/suppliers because of the cost and meeting the requirements). It is common for SIE-initiatives to be based on multi-actor collaborations. The successfully implemented projects are good examples of (public-private) partnerships between actors that have different ‘weight’ (based on resources, capabilities/expertise, credibility), e.g. between community groups, energy suppliers, local authorities, DNOs, commercial developers, tech companies. The latest developments around local energy markets and smart local energy communities, within which LEE/P2P can be developed, lead to new alliances being formed (e.g. for local energy market projects), although it seems that the role for less powerful actors like communities could be limited in large-scale projects.

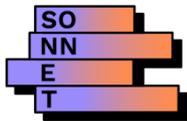
Another example is Power for People which is a not-for-profit organisation, campaigning for the UK to rapidly transition to 100% clean energy and for this to benefit local economies. Their campaign for the Local Electricity Bill (The Community Energy Revolution) is one of the most noticeable initiatives that could potentially enable the development of the SIE-field through enabling much more local supply. The supporters of the Bill include 60 county authorities and local authorities, Greenpeace, trade associations such as British Hydropower association, Renewable Energy association, Solar trade association, Good Energy, Church of England, and many community groups (300 signed up), individuals lobbying their local MPs, 300 parish town councils, Chamber of Commerce. The Bill is welcomed by Community Energy England who are supporting the initiative and provided early insight into the Bill, which started off as a Community Energy Bill. Co-op Energy, who are tasked with growing renewable CE projects, have not actively supported the Bill, because it does not mention renewable energy and it does not mention CE explicitly.

5.3.2.5 How has the SIE-field co-evolved with the policy context (if so) (and what was the relative importance of the urban, regional, national and European level)?

The electricity system (including electricity supply) is a highly regulated field. The policy and regulatory frameworks define the rules and actors’ responsibilities. Although policy context is evolving, there are still significant regulatory barriers for LEE and P2P trading.

The energy policy, e.g. the electricity market reform in GB, and transition to smarter electricity system, have a direct impact on development of LEE and P2P electricity trading. The reforms result in **changing the governance arrangements** for the electricity system (e.g. the shift from Distribution Network Operators to Distribution System Operators, a transition to a more complex, systemic model that accounts for and manages multiple points of variable supply and consumption). Other policies e.g. the closure of the FiT scheme also influenced developments in the SIE-field – as a result, prosumers and community energy groups are more actively searching for new business models, also exploring opportunities around LEE and P2P electricity trading.

The regulatory framework is built around the ‘**supplier hub model**’, and the implementation of new models like P2P trading at bigger scale would have significant implications for the way in which the electricity system is organised; it challenges the whole idea of what the role of a supplier is in a new arrangement. The **proposed changes** for the regulatory framework (P379) will allow customers buy energy from more than one supplier, creating opportunities for more local electricity exchange schemes to come to market. BSC Modification Proposal: P379 (Enabling consumers to buy and sell electricity from/to multiple providers through Meter Splitting) which was undergoing the assessment



procedure at the time of the study, was raised by New Anglia Energy, a new BSC entrant, with support from a range of BSC Trading Parties including OVO Energy and Cooperative Energy, and non-BSC parties including Powervault and Verv. Another proposal, although more controversial and contested by some, is the Local Electricity Bill which aims to empower communities to sell their energy directly to local people. The anticipated changes in policy and regulatory framework have a potential to empower SIE-field-actors, alter the power balance in the SIE-field, and change how the electricity system operates in GB.

5.3.2.6 How are power relations (such as inequality, exclusion, oppression, exploitation, injustice) being transformed and/ or reproduced by the SIE-phenomenon under study? (and vice versa – how are SIEs enabled and impeded by power relations?)

Some of those power relations can be observed in LEE. For example, the trials and single projects that are developed by community groups or have a community element can be seen as an exclusion by defining the boundaries of particular projects and limiting participation in the initiative (similar to CE phenomenon). There is a sense of unfairness translated by some of the supporters of local electricity exchange ideas, towards the community groups who would like to become local suppliers but cannot afford to pay for the supply licence or network charges.

The arrangements around electricity system and market are complex, and can perform as impeding factors for LEE (e.g. the electricity supply licence rules can be an obstacle for small generators/suppliers). It is common for SIE-initiatives to be based on multi-actor collaborations. There are significant asymmetries regarding the resources possessed by different types of actors in the SIE-field. CE groups' resources for implementing new innovative projects in LEE are scarce in comparison with the traditional industry actors such as energy companies. Local groups and NGOs that support LEE at the grassroots level often rely on volunteers and/or external support for their activities. The successfully implemented projects are good examples of (public-private) partnerships between actors that have different weight, e.g. between community groups, energy suppliers, LAs, DNOs, commercial developers, tech companies. The latest developments around local energy markets and smart local energy communities, within which LEE/P2P can be developed, lead to new alliances being formed, although it seems that the role for less powerful actors like communities could be limited in large-scale projects.

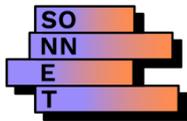
5.3.2.7 Reflections on the main research question (based on answering the minor ones)

No additional reflections needed.

5.3.3 What are the enabling and impeding factors for the SIE-field-actors and other field actors to conduct institutional work and change the 'outside' institutional environment?

5.3.3.1 How, why, and where do SIE-field-actors and/ or other field-actors conduct activities linked to creating, maintaining and transforming institutions?

There is a believe that some degree of decentralisation is inevitable, and local energy supply and LEE mechanisms could play a key role in these processes. Such energy decentralisation is often strongly correlated with institutional change (Judson et al. 2020). As LEE/P2P is still a nascent SIE-field, the SIE-field-actors are actively involved in institutional work



trying to shape the practices around LEE and to influence the design and operational principles of the future electricity system.

One of the most important types of institutional work within the SIE-field under study are the various forms of **advocacy and lobbying** by SIE-field-actors in attempts to shape the positions adopted by national government and regulatory bodies. This is related first of all to changing the existing policy and regulatory framework that would potentially enable LEE and P2P electricity trading. One of them is the Local Energy Bill. Despite some criticism, it is supported by numerous stakeholders including local authorities, Greenpeace, Chamber of Commerce, trade associations, Good Energy, Church of England, community groups and individuals lobbying their local MPs; the Bill is welcomed by Community Energy England who is supporting the initiative and helped to develop the Bill. Another initiative that is lobbied by actors in the SIE-field is the multiple supplier proposition which would change the current 'supplier hub' model and the way the electricity system operates.

One potential sign of institutionalisation of the SIE-field would be **replicability and dissemination** of models that at the moment are often represented by stand-alone projects developed in particular community/locality. There are attempts to achieve wider adoption of particular approaches to organising LEE. For example, Energy Local initiatives are trying to set up clubs and use the model in different parts of the country. Trial projects is another way to test innovative approaches in order to find a working proposition.

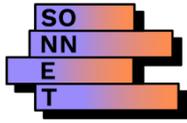
The state can also be an '**institutional entrepreneur**' suggesting/supporting the novel approaches to energy, e.g. local energy market concept and smart local energy communities. The state as the most powerful actor has resources to implement its agenda by mobilising other actors and through funding and other policy mechanisms. Overall, there is a general understanding that the electricity system is changing, and most examples in the SIE-field refer to transforming and creating institutions rather than maintaining existing ones. The obvious case of maintaining institutions would be consumers' resistance to practice change around energy i.e. an involvement in LEE/P2P.

5.3.3.2 Who is involved in conducting institutional work (and who is not)? Which actors benefit from this work (or not)?

As the SIE-field-actors are very diverse, with different amount of power and resources, it is not surprising that their views on the aims and role of LEE/P2P can differ. Some have a more market-oriented view (especially commercial actors), others see LEE as an opportunity for citizens and local communities to benefit from those initiatives (including non-financial benefits like community cohesion or elevation of fuel poverty).

Most SIE-field-actors are involved in institutional work (community groups, DNOs, energy suppliers, tech companies, LAs, Ofgem). For example, development of different models of LEE is driven by different types of actors (who arguably have slightly different aims/objectives) – communities, tech companies, energy suppliers. The models advocated and implemented by CE groups usually aim to deliver benefits for local consumers in terms of electricity price (like local tariffs). They can also deliver wider benefits, such as helping to reduce fuel poverty in the local community around the wind farm and local environmental projects. Although the common aim of implementing LEE models is to help residents access the environmental and financial benefits of renewable energy (the general response could be 'consumers' who can benefit), it is argued that in reality only those who participate and those who are capable of participating (e.g. the 'early adopters'/'early movers'), can meet the cost of participation, and somebody has to pay for the technology that enables these P2P transactions.

It is not clear which models/approaches will be most successful and more widely adopted/institutionalised. The value, costs and benefits of LEE are yet to be evaluated and would be specific for particular models, actors involved and locale.



Another type of institutional work is about changing existing regulations and policy around electricity markets. This work is conducted by different actors: for example, the Local Electricity Bill campaign is organised by a non-for-profit organisations but gained support from many organisations (including 60 county authorities and local authorities, Green Peace, trade associations such as British Hydropower association, Renewable Energy association, Solar trade association, Good Energy, Church of England, community groups, individuals lobbying their local MPs, 300 parish town councils, Chamber of Commerce). It is claimed that the Bill could make more projects viable bringing more money for local economy and benefit communities directly. CE groups and consumers would be those who would benefit from the proposed change.

The state can also be an ‘institutional entrepreneur’ supporting the novel approaches to energy, e.g. a local energy market concept and smart local energy communities. The state as the most powerful actor has resources to implement its agenda by mobilising other actors and through funding and other policy mechanisms. The beneficiaries of these initiatives are a broad range of actors, including residents, businesses and communities. The confirmed commitment to smart meters as part of an essential infrastructure upgrade would enable consumers to access innovative solutions such as smart tariffs, including ‘time of use’ tariffs, which also proved to be a requirement for local electricity exchange/P2P models.

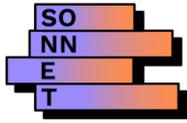
5.3.3.3 What have been the most important activities linked to creating, maintaining and transforming institutions? Outline these activities through describing 2-4 examples.

Lobbying activities for particular policy and regulatory changes are taking place and are supported by different types of actors and their alliances (e.g. the Local Energy Bill, Ofgem regulations or codes for electricity market in the UK). The proposed changes for the regulatory framework (P379 – multiple supplier proposition) will allow customers buy energy from more than one supplier, creating opportunities for more local electricity exchange schemes to come to market. Another proposal, although more controversial and contested by some, is the Local Electricity Bill which aims to empower communities to sell their energy directly to local people. The anticipated changes in policy and regulatory framework have a potential to empower SIE-field-actors, alter the power balance in the SIE-field, and change how the electricity system operates in GB.

One potential sign of institutionalisation of the SIE-field would be replicability and dissemination of models that at the moment are often represented by stand-alone projects developed in particular community/locality. There are attempts to achieve wider adoption of particular approaches to organising LEE. For example, Energy Local initiatives are trying to set up clubs and use the model in different parts of the country. The first Energy Local Club started in a small town called Bethesda, in North Wales in 2016. Clubs have also been set up in Dorset and other parts of Wales where it seems to be popular; now they are trying to develop more schemes across the UK working with some key partners and funders (e.g. Coop community Energy and Octopus Energy). Trial projects (e.g. Ofgem’s sandbox) is another way to test innovative approaches in order to find a working proposition.

5.3.3.4 What forms do these activities linked to maintaining, creating and transforming institutions take (e.g. emotion work, boundary work, strategy work, practice work and/ or values work)? Link back to the 2-4 examples

The activities linked to maintaining, creating, and transforming institutions can take different forms. One example of strategy work is the lobbying activities, e.g. for the Local Electricity Bill, and support provided for the bill by different actors. Another example of strategy work is the Ofgem’s sandbox trials (i.e. P2P electricity trading) which aim to support innovators in launching new low carbon products and services. These trials help the regulator, Ofgem, to get



the insights about what is happening on the ground and using some of the insights to influence the shape of future policy.

Community SIE-initiatives are good examples of values work as they often translate the ideas of engagement and inclusiveness and are inspired by climate change and green energy agenda. The example discussed earlier, Energy Local club is the scheme that gives generators a price for the power they produce, that reflects its true value, keeps more money local and reduces household electricity bills. Another SIE-initiative, Wadebridge Renewable Energy Network is keen to look at the ways how to elevate fuel poverty in their community and make renewable energy more 'inclusive' by subsidising people in fuel poverty/giving them a cheaper tariff if possible (Energy Equality project).

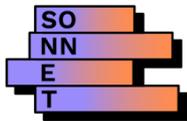
Sharing experiences with other community groups (using some schemes as 'blueprint' so successful models can be reproduced across the UK) could potentially change the practices around energy supply. By implementing some models of LEE (e.g. those that are based on local energy tariffs like in Energy Local) SIE-field-actors are trying to change the practices of energy use by domestic customers (practice work).

5.3.3.5 What factors have enabled and/or impeded institutional work? E.g. Resources, learnt lessons and competences connected to actors/ alliances/ networks/ collaborations. [Link back to the 2-4 examples](#)

The development of LEE and P2P trading is affected by broader policy e.g. changes in subsidy schemes for small-scale renewables or changing policy discourse that shifted from CE to local energy – both being enabling rather than impeding factors for the development of the SIE-field. In relation to the example of institutional work discussed above, the support provided for the Local Electricity bill by numerous and very diverse actors is an enabling factor, as well as the campaigner's previous experience in organising similar initiatives.

The innovation such as distributed ledger technologies (blockchain) is a key element and an enabler for P2P electricity trading mechanism and LEE. Smart metering is seen as a step-change for the energy industry overall and is a necessary element of LEE and P2P electricity trading. The rollout of smart meters that started in Autumn 2015 enables the use of real-time energy consumption data, which helps link consumption directly with generation and can change the way energy tariffs are structured. At the same time, the complexity of some technologies that can enable P2P electricity trading (e.g. virtual platforms) could be an obstacle for wider adoption, particularly by domestic consumers.

Based on the fieldwork, it is possible to suggest that the lack of public understanding of LEE/P2P electricity trading and sometimes a lack of willingness to participate in some LEE schemes (e.g. when it requires active participation) could be an impeding factor for a wider adoption of LEE/P2P trading models. For Energy Local scheme the main challenges were technology-related (smart metering) and the engagement of the community. Also, the system employed for managing the actual consumption involved notifications (e-mail alerts) about e.g. the cheapest time to use electricity or suggesting the peaks when lots of electricity would be generated encouraging people to use electricity at that time. Finding ways to keeping people engaged with the concept to make it work and maintaining certain level of motivation can be challenging.



5.3.3.6 What have been intended and unintended effects (i.e. contributions) derived from conducting institutional work? What influence have they had on SIE-field and ‘outside’ institutional environments? Link back to the 2-4 examples

It was difficult to make conclusions about the intended and unintended effects derived from the institutional work in this case study as in many examples of institutional work the effects are not yet obvious and/or there is not enough data that would shed light on such contributions (most initiatives are at the very early stage or have not been implemented yet).

One example is the growing interest in local energy (local energy markets, smart local energy systems, local electricity exchange) among those involved in CE projects. This is reinforced by the changing policy agenda/discourse (e.g. a shift to local energy; decentralisation and decarbonisation of energy system), removal of subsidies for small scale renewables and the examples of initiatives that trialled or successfully delivered the projects around LEE. The rollout of smart meters enabled some forms of LEE models (e.g. Energy Local). Arguably, one anticipated effect of potential regulation change (e.g. the Local Electricity Bill which is supposed to enable electricity generators to become local electricity suppliers; multiple supplier proposition (P379) to enable consumers to buy and sell electricity from/to multiple providers through meter splitting) would be the growth of the LEE SIE-field, especially the involvement of CE groups.

5.3.3.7 Reflections on the main research question (based on answering the minor ones)

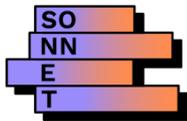
No additional reflections needed.

5.4 Case study 3: Financing and subsidies for renewable energy

5.4.1 How have the SIE and SIE-field emerged, developed and institutionalised over time?

5.4.1.1 What are the relevant SIE-field-actors and other field-actors within the SIE-field and what are their roles within the SIE-field? How have these changed over time?

Financial and subsidy mechanisms have pecuniary implications for everyone who pays an electricity bill, but among the **actors** who have taken a direct interest in shaping them are: the UK government (which has created, modified, and destroyed sources of financing, revenue streams, and costs through various subsidy, tax, and market reform policies and which has intervened in financial markets to stimulate private financing); Ofgem (the regulator of the electricity markets in GB); the FCA (Financial Conduct Authorities), the regulator of financial markets and services in the UK; participants in the electricity markets (electricity supply companies; vertically integrated utilities; independent power producers; electricity network operators signatories to Power Purchase Agreements (PPAs)); developers of renewable energy projects; investors in renewable energy projects (including developers, banks, utilities, independent power producers (IPPs), individuals, households, businesses, and public sector bodies, local governments, private investors, and institutional investors); financial services companies such as crowdfunding platforms; trade associations (e.g. the Solar Trade Association) and interest groups (e.g. Centre for Sustainable Energy, Community Energy England).



There is a diversity of SIE-field-actors and other field-actors that were entering the renewable energy finance over the period covered in the study, connected with different institutional fields (e.g. CE, institutional investments in green infrastructure, municipal energy, investment-based crowdfunding) and different financial and subsidy mechanisms in the UK. It is particularly interesting to see the activities of **non-traditional actors** (e.g. citizens, municipalities, institutional investors) whose role in renewable energy finance was becoming more prominent at certain stages of the SIE-field development, in response to some policy changes or changes in the outside institutional environment (e.g. financial markets); this includes the increasing role for local authorities in financing renewable energy projects, institutional investors interested in opportunities associated with climate change, and small players e.g. citizens usually investing through share offers or crowdfunding.

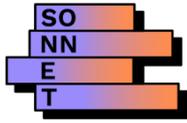
5.4.1.2 What are relevant activities, aims/ goals and narratives that have been developed and manifested by SIE-field-actors and/ or other field-actors within the SIE-field over time?

‘Financial mechanisms’ encompasses both, the ways in which activities are ‘financed’ through debt, equity, or grants (in the sense of (Braunholtz-Speight et al. 2018)), and the revenue streams that the activities generate, including subsidies; both of those are relevant activities for this SIE-field. Besides, it includes subsidy mechanisms for renewable energy as government support for alternative sources of energy has been crucial for development of the sector. Admittedly, the use of subsidies to renewables is motivated by the need to address market failures, such as to address the price disparity with fossil fuels; they have been credited with increasing innovation, lowering costs, and expanding the energy mix. In the UK, subsidies have led to a significant increase in the deployment of renewables, leading to a rapid decrease of the cost of some of these technologies. In FS RE SIE-field the actors often have diverse and contradictory **aims and interests** (e.g. some actors see RE sector as a business opportunity and are more profit-driven, some have a ‘green’ agenda as the main driving motive; the government’s view on the use of subsidies for renewable energy, and particularly on subsidy cuts, can be different from potential beneficiaries of those subsidies). However, the overall **goal** – the growth of renewable energy sector and decarbonisation of energy system is supported/shared by SIE-field-actors (although the visions of achieving this can be different). Climate change and low-carbon transitions was another major **narrative** that underpinned the development of the SIE-field. Other narratives were dominant at different stages of the SIE-field development – a viability/nonviability of renewable energy technologies and a reliance on government support and subsidies, risks associated with investments in renewable energy, a diversification of investment and financial mechanisms, financial mechanisms as a means of engaging the public with a climate/ renewable energy agenda, speculations about the potential and growth of the renewable energy sector, post-subsidy/ subsidy-free renewables.

5.4.1.3 What types of interactions/ relations exist between SIE-field-actors and/ or other field-actors? What types of informal and formal alliances, networks, collaborations have existed (and possibly still do)?

The **interactions** between actors are best characterised by different types of networks and forms of collaborations. The most prominent are those **networks** that are relatively formalised or ‘tangible’; they have shared goals, can learn from each other, have shared platforms/forums (for e.g. meetings and knowledge exchange). FS RE case study features many examples of interest groups that are representative of more formalised networks ranging from trade associations like the Solar Trade Association (STA), Renewable UK, and the UK Crowdfunding Association, to organisations like Community Energy England and Co-operatives UK, and looser coalitions like the Community Energy Coalition.

Contestations (debates among relevant actors over e.g. SIE-field structures and processes such as disagreements about common aims or approaches to lobbying policymakers) as part of actors’ interactions are particularly important for the



institutionalisation process. The members of the organisations mentioned above are not always in agreement. For instance, while UK Crowd Funding Association (UKFCA) advocated for the creation of an Innovative Finance Individual Savings Account (IFISA) and worked collectively on establishing IFISA for debt-based crowdfunded investments, it was “a bit of a battle” for the platforms doing bond/debenture-based crowdfunding to keep those included in the design, as the larger loan-based platforms were less interested in pursuing this. Here, the bond-based platforms in the association used the argument that since “bond-based crowdfunding operates to a higher regulator standard [...] it would be illogical to exclude” it and were successful in making bond-based investments eligible for inclusion in the IFISA (FS_UK01⁵).

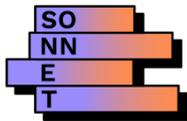
Another example is when a change in the regulation of Cooperatives in 2014 caused disruption and was particularly disturbing to some existing energy cooperatives. Legislation in 2010 and 2014 had introduced Cooperatives and Community Benefit Societies as the successors to Industrial and Provident Societies. In brief, community benefit societies exist for the benefit of the community while cooperatives exist for the benefit of their members. The difficulty arose when the Financial Conduct Authority stopped allowing energy cooperatives to register as Cooperatives in 2014 and questioned the legal status of those which already had. The debate turned on the extent to which an organisation must trade goods or services with its members to be considered a bone fide cooperative — renewable electricity coops generally do not sell electricity to their members for practical reasons (Voinea 2014). According to one interviewee, there was a divergence of view within the cooperative movement (FS_UK5). Co-operative renewable electricity generators found themselves on one side of an ‘ideological’ contest within the wider co-operative movement and, to their frustration, found the FCA aligned with the other side. In response to this, they were able to enlist the support of figures within the broader co-operative movement but, so far, to no avail. This contest was not over the inclusion of electricity generation activities per se, but rather the extent to which a co-op must trade with its members, something which the structure of the electricity market makes difficult for co-operative generators.

Other forms of networks are **intangible networks** which are invisible/less visible (e.g. no formal structures, meetings or gatherings) and connected through co-dependency or a shared discourse. For example, co-financing of renewable energy projects can result in such networks when gathering funds from variable sources; financing by different actors/sources can happen at different stages of project development (e.g. more risky/less risky) or during the same stage.

5.4.1.4 How can the interactions/ relations between SIE-field-actors and/ or other field-actors be characterised (e.g., cooperation, exchange, competition and conflict)? How have they changed over time?

In FS RE social interactions (and changes to social relations) that aim to bring about changes in the energy system were often based on **exchange/ organising** and **cooperation**, rather than conflict or competition, particularly during phase 1 and phase 2 of the SIE-field development (see case study report in the appendix). During the early stage the social interactions were largely framed by the government initiatives who introduced key subsidy mechanisms for renewable energy (e.g. Feed-in Tariff scheme which influenced the trend for CE); it also tried to channel new investment into renewable energy with e.g. a public Green Investment Bank and the Electricity Market Reform attracting institutional investors who might not have the skills to otherwise invest in offshore wind. Some elements of cooperation and exchange can be found too e.g. when the UK Crowd Funding Association was founded to represent the young industry; another example of cooperation is local authorities supporting CE sector. Establishing new financial mechanisms also

⁵ Please find a full list of interviewees in the FS RE case study report that can be found in the appendix of this country report.



requires some forms of cooperation (as any investment activity). During the last phase marked as subsidy free renewables one could argue that there has been a rise of competition between some actors e.g. providers of finance/ investors but this was not very prominent in the case study.

5.4.1.5 What is ‘socially innovative’ about the SIE (including SIE-initiatives and/ or SIE-field-actors)? How and to what extent do ideas, objects and/or actions demonstrate a change in social relations and new ways of doing, thinking and/or organising energy?

Financial and subsidy mechanisms and their evolution come with **changing social relations**; i.e. novel (in a national context) actor constellations (including new relations between actors or new roles for actors) in relation to renewable energy generation in the UK. The socially innovative aspect is related to change in social relations between/ among actors that these mechanisms bring, changing their current ways of doing, thinking and/or organising financing for renewable energy.

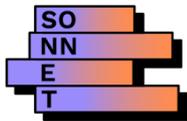
The SIE-field is complex as it is constituted by a number of sub-fields and institutions concerned with changing social relations in connection to financing of wind and solar, that can be part of other broad institutional fields, i.e. ‘municipal energy’ (concerned with local governments taking a greater role in the provision of energy services, including ownership of electricity generation assets); ‘community energy’ (which is about direct citizen participation and control of energy activities including investment in electricity generation assets); ‘investment-based crowdfunding’ (‘alternative’ finance for renewable energy projects – online platforms to offer equity and/or debt based investments to the public at large); ‘institutional investment in green infrastructure’ (e.g. pension funds, insurance companies); ‘corporate’ and ‘private wire’ PPAs (contractual arrangements whereby an organisation buys electricity for its own use more or less directly from specific generators).

These fields are interconnected and can overlap creating ‘space’ for social innovation and changing social relations around energy. For example, while crowdfunding platforms have been used by CE projects, the two are clearly distinct developments in regard to financing renewable energy.

There is a diversity of SIE-field-actors and other field-actors that were entering the renewable energy finance over the period covered in this study, connected with different institutional fields, types of SIE, and different financial and subsidy mechanisms in the UK. It is particularly interesting to see the activities of non-traditional actors whose role in renewable energy finance was becoming more prominent at certain stages of the SIE-field development, in response to some policy changes or changes in the outside institutional environment (e.g. financial markets). The development of financial mechanisms empowered small players offering investment opportunities and ways to support renewable energy. For example, the rise of crowdfunding (as well as CE projects) resulted in increased citizen engagement in financing wind and solar projects and changed the role of citizens from consumers to investors. Although the investor role itself was not new to the SIE-field but was innovative for in respect to citizens. This illustrates a change in role within the current system of roles, and thus not a dramatic change of the system of roles. Another example is the change in the government role as the sector was moving to subsidy-free renewables.

5.4.1.6 How has the SIE developed over time (and space)?

In the FS RE case study, we looked at the last 10 years of the SIE-field development with some pre-history going back to 1989 as some events and developments relevant to the SIE-field happened during that period setting the context in which financial and subsidy mechanisms have been developing during 2010-2020.



At the start of **Phase 1 (2010-2015)** one of the key subsidy mechanisms was launched – the Feed-in Tariff (FiT), with consultations, reviews, and subsequent cuts of the scheme in the following years. The trend for CE was very much influenced by the FIT scheme and the use of community shares to raise equity finance and participation for renewable energy projects (there was considerable growth in community share offers). The coalition government had made some commitment to support CE (e.g. Rural Community Energy Fund (RCEF); a "community energy revolution in the UK" pledge, followed by Community Energy Strategy 2014 and launching Urban Community Energy Fund (UCEF) which, like the RCEF, offered grants and loans for pre-planning development work). After the Community Energy strategy 2014 was published by the Department of Energy and Climate Change (DECC), the government was encouraging local authorities to support CE projects, and to be more active in energy provisions. This led to the increasing role for local authorities (LAs) in financing renewable energy projects. Institutional investors also played a big part after 2014, e.g. UK local authority pension funds, insurance and pension companies.

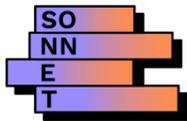
Along with setting up the Green Investment Bank (GIB) (launched in 2012), the coalition government had been developing a programme of Electricity Market Reform (EMR) which culminated in December 2013 with the assent of the Energy Act 2013. Along with a carbon price floor and emissions standards this introduced a Capacity Market and Contracts for Difference (CfD). CfDs were intended to replace the Renewables Obligation as the main state support for deployment of large-scale renewable and nuclear generation. Attracting new kinds of investors to energy generation infrastructure, including institutional investors, was a key goal in the formulation of this policy.

While the government worked to channel new investment into renewable energy with the GIB and EMR, a quite different market for investment in renewables was being developed with the emergence of crowdfunding platforms – a mechanism for raising capital from large number of small investors. In 2011, a crowdfunding start-up, Abundance Generation, became the first platform to receive authorisation from the FSA; it was also the first platform in the UK focused on raising capital for renewable generation projects. This was followed by other platforms – the Trillion Fund, Gen Community, Ethex; the UK Crowd Funding Association was founded in 2013 to represent this young industry. Later, sudden changes in government support reduced investor confidence across the board, and proved especially challenging to the crowdfunding platforms.

At the very start of Phase 1 a new potential revenue stream for local authorities opened up in 2010, when they were allowed to sell electricity generated by a range of renewable sources including wind, solar, and biofuels; they were free to register for the Feed-in Tariff. Local governments started taking a greater role in the provision of energy services, including ownership of electricity generation assets and in financing renewable energy projects. For example, some LAs supported the CE sector; they also started performing as institutional investors for renewable energy projects.

The **Phase 2 (2015-2019)** represents a series of policy changes which significantly cut subsidies for the development of new onshore wind and solar PV installations at all scales. This resulted in expressions of concern, objections, and push-back from SIE-field-actors ranging from institutional investors to CE groups, but there were differences in emphasis in the responses of representatives of different groups reflecting their different interests, and differences in the arguments they used to make their case, reflecting their different capacities. While the policy changes provoked resistance from a wide range of actors, their efforts had limited impact on policy, and there was a marked drop in the deployment of onshore wind and solar, while offshore wind capacity continued to grow. Institutional investors were among those with concerns about the turn taken by the government's renewable energy policy. Demand for Corporate PPAs increased, which helped make the business case for some new onshore developments.

More institutional work was conducted during this period by SIE-field-actors establishing new mechanisms, e.g. to provide bridge finance to help communities acquire renewable projects. When the facility trading as Leapfrog Finance (launched in 2015) started, there was nobody offering the same facilities; it stimulated other similar organisations to



look at this opportunity (e.g. Thrive Renewables, Power to Change). Despite the difficulties reported by some platforms in finding borrowers for renewable energy projects, June 2017 saw the launch of Mongoose Crowd by Mongoose Energy who billed it as the ‘first dedicated crowdfunding platform for community energy’. The debt-based crowdfunding sector as a whole made an important gain in April 2016 with the introduction of the ‘Innovative Finance Individual Savings Account’ for UK savers. Another innovative model was suggested by Ripple Energy (founded in 2017) in collaboration with Co-op Energy, whereby members of renewable energy coop would directly benefit from the electricity these coops produced through reduced electricity bills.

During the latest phase of the SIE-field development (**Phase 3: 2017 – present**) the projects that were announced as subsidy free started happening (mainly solar). In connection to subsidy-free projects, the importance of having a private wire PPA increased. From January 2020 the Smart Export Guarantee scheme has been brought in to replace the FIT scheme, to encourage investments in renewable technology and reduce carbon emissions for achieving net zero carbon emissions by 2050. One of the latest mechanisms used by some LAs is a crowdfunded Community Municipal Investment, a new model for citizen led investment in LAs.

5.4.1.7 How/ to what extent do narratives and activities by SIE-field-actors and other field-actors refer to power issues and include ambitions to change them?

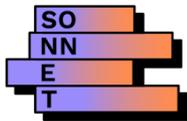
The financial mechanisms and subsidies for renewable energy in the UK are largely framed by policy and regulation in the SIE-field. This means that the actors’ ability to act is limited. In other words, power is more constrained and circumscribed.

Under the budgetary constraints imposed by the central government’s austerity programme, local authority energy teams devised to pursue their ambitions to be the ‘self-financing energy teams’. The integration of energy services into finance and capital investment programmes was an interesting solution, which empowered some local authorities to deliver their energy agenda, including finance for renewables (power to). They were free to register for the Feed-in Tariff, and some authorities were quick to use this new power. In March 2010, Bristol City Council’s cabinet approved the procurement of a wind farm developer to construct two wind turbines at Avonmouth. This made Bristol the first local authority to own operational wind turbines. The installation, which cost the best part of 10 million, was financed by the Public Works Loan Board via prudential borrowing and was projected to generate annual income of 1 million from the FIT and the sale of electricity and Levy Exemption Certificates (Bristol City Council, n.d.; Local Government Association, 2013). As of 2020, this income "pays for an awful lot of staff" for the Bristol Energy Service (FM_UK04). Some local authorities also supported the burgeoning CE sector: the revolving loan fund for CE established in late 2012 as part of Cornwall Council’s Green Cornwall Programme (Mitchell 2012), the Lambeth Community Energy Programme started in 2011, and the agreement (also signed 2011) between Bath & West Community Energy (BCWE) and Bath and North East Somerset Council.

Power ‘over’ is well-illustrated by the position of a regulator and the decisions about e.g. subsidy mechanisms and other relevant policies. Another obvious example of power ‘over’ is the position of investors and lenders who in many cases exercise control over their investments and subsequently over renewable energy generation projects they invested in.

Institutional investors have capacity to mobilise resources. Their role as powerful actors has grown e.g. an increasing amount of capital has been invested as unlisted debt and equity by pension funds and insurance companies directly or indirectly through specialised infrastructure funds.

The position of investors, especially those less typical, e.g. through crowdfunding, can demonstrate all three types of **power (over, to and with)**, as well as serving as examples of distributed power. For example, small investors collectively



can be powerful actors, particularly when seeing it as a form of partnership. It is suggested that part of the value in having people as financiers rather than institutions is that lenders tend to be active supporters of projects. Support from lenders on the platform has included allowing their borrowers to delay interest payments or investing more money where this is urgently needed for a project to succeed. In one instance, investors in a project wrote to their MPs and the energy markets regulator Ofgem to challenge a regulatory decision which threatened its viability.

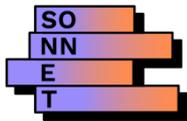
The development of SIE-field over time demonstrates how actors collaborate and work together towards common goals (**power with**). For example, in relation to local authorities, the APSE Energy service was launched in 2014. Operating under the Association of Public Sector Excellence umbrella, this collaboration of councils had 32 member authorities at launch, and in a response to the Ofgem consultation on 'non-traditional business models' which closed in May 2015. It gave its "mission statement" thus: "to form an effective collaboration of a large number of local authorities to enable and facilitate the municipalisation of energy services. Another example of power with is the Local Energy Assessment Fund (LEAF) which was administered by Energy Saving Trust with several partners including Carbon Leapfrog (merged with PURE to form Pure Leapfrog), Community Energy Wales, Low Carbon Communities, and the Community Energy Practitioners' Forum. In the CE field, there are also numerous examples of power with, e.g. the Community Energy Coalition was convened in 2011 by 'Forum for the Future' with a diverse set of member organisations including Energy4All, Co-operatives UK, the Centre for Sustainable Energy (CSE), the National Trust, the Church of England, the National Farmers Union, Friends of the Earth, the Energy Saving Trust, and Carbon Leapfrog.

5.4.1.8 What have been the (shared) narratives, activities, knowledge, learnt lessons, etc. between alliances/networks/collaborations of SIE-field-actors and/ or other field-actors? How have they been reproduced, adopted and replicated in the SIE-field? To which extent have they been legitimised and/ or contested by several actors within the SIE-field? Have there been any key changes over time?

The networks discussed in the case study were involved in institutional work and lobbied for an institutional change; their activities were contested by the incumbents and powerful actors. The examples are the trade bodies (such as UK Crowd Funding Association), and the networks around the policy-related campaigns e.g. in relation to subsidies for renewables. For instance, UK Crowd Funding Association (UKFCA) advocated for the creation of an Innovative Finance Individual Savings Account (IFISA) and worked collectively on establishing an IFISA for debt-based crowdfunded investments. Renewable Energy Association (REA) and Friends of the Earth had been leading a campaign for the introduction of a Feed-in Tariff "to complement the Renewables Obligation (RO) which, at the time, was proving effective only for landfill gas and large-scale onshore wind" (Wolfe 2016) with a coalition including the Co-operative Bank and the National Farmers Union (Friends of the Earth, 2017). After initially meeting resistance from the main political parties, "new Conservative party leader David Cameron proposed the introduction of feed-in tariffs in the UK. Subsequently, a few weeks after his appointment as the first Secretary of State for Energy and Climate Change, Ed Miliband reversed the government's opposition, amending the 2008 Energy Bill to include enabling powers for the creation of feed-in tariffs" (Wolfe, 2016). It is worth noting that the creation of a shared narrative or network may have a legitimising power.

5.4.1.9 Reflections on the main research question (based on answering the minor ones)

No additional reflections needed.



5.4.2 How do SIE-field-actors and other field-actor interact with the ‘outside’ institutional environment and thereby co-shape the SIE-field over time?

5.4.2.1 Which institutions (regulative, normative, cultural-cognitive) within the ‘outside’ institutional environment have shaped (including enabled/ impeded) SIEs and its SIE-fields (and how)?

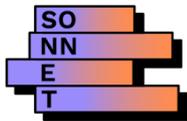
Broadly speaking, the outside institutional environment for the SIE-field is constituted by the following: foundational institutions of the market economy in the UK and abroad, such as private property; the regulatory institutions of UK banking and financial markets; the UK political system and regulatory institutions such as Ofgem; the institutions of the UK electricity markets; the EU, whose influence can be seen in state-aid rules and directives on renewable energy targets. Importantly, the evolving SIE-field is influenced by developments in both, the energy system and financial markets; they consist of a wide range of institutionalised rules, norms and beliefs, and have undergone some significant changes over the past decade. For example, the energy system in the UK is characterised by the need to decarbonise the energy system as a result of climate change, the growing deployment of renewable energy technologies (solar and wind), and significant changes in the policy context that often has been framing the changes in the energy sector.

5.4.2.2 What are the key events, external shocks, trends and inter-field interactions that enable/ impede SIEs and its SIE-fields (now and in the past)?

The **societal trends** can perform as enabling or impeding factors for the FS RE SIE-field. One example of the role of societal trends can be seen in the increasing demand for corporate Power Purchase Agreements (PPAs) (and to some extent private wire PPAs). The fact that increasing number of large companies have decided to make their own commitments in relation to climate and renewable energy has been cited as a major driver of demand for long term PPAs with renewable generators. This international trend can be seen in the growth of the RE100 group, founded in 2014, of companies committed to sourcing 100% of their electricity from renewable sources. As of December 2019, the group had 211 members whose collective electricity consumption was a little more than the nation of South Africa (which ranks 21st globally). The importance of having a private wire PPA has recently increased in connection to subsidy-free renewable energy projects.

The emergence of crowdfunding platforms, a mechanism for raising capital from large number of small investors, that started providing finance for renewable energy generation projects, was another important development in the SIE-field. In 2011, a crowdfunding start-up, Abundance Generation, became the first platform to receive authorisation from the FSA; it was also the first platform in the UK focused on raising capital for renewable generation projects. This was followed by other platforms - the Trillion Fund, Gen Community, Ethex, and the UK Crowd Funding Association (UKCFA) to represent this young industry (founded in 2013). Later, sudden changes in government support (in relation to FIT, RO) reduced investor confidence across the board, and proved especially challenging to the crowdfunding platforms.

Another trend is related to municipal energy finance which is concerned with local governments taking a greater role in the provision of energy services, including ownership of electricity generation assets. Such ownership was common in the UK in the early twentieth century but was essentially eliminated in the post-war nationalisation and centralisation of the electricity supply industry. During the period covered in the study one could see the growing role of LAs in financing renewable energy projects. For example, some LAs supported the CE sector; they also started performing as institutional investors for renewable energy projects. One of the latest mechanisms used by some LAs is a crowdfunded Community Municipal Investment, a new model for citizen led investment in LAs (a bond issue in which the capital raised



is earmarked for a specific purpose or project, but where the risk to the lender is not project risk, but rather the risk that the issuing body is unable to pay). For Local Authority energy teams, the declaration of a 'climate emergency' made by many UK local authorities in 2019 has helped them in making their case for municipal energy projects.

Regarding **inter-field interactions**, it is important to note that FS RE is constituted of a number of sub-fields and institutions concerned with changing social relations in connection to financing of wind and solar, that can be part of other broad institutional fields, i.e. 'municipal energy' (concerned with local governments taking a greater role in the provision of energy services, including ownership of electricity generation assets); 'community energy' (which is about direct citizen participation and control of energy activities including investment in electricity generation assets); 'investment-based crowdfunding' ('alternative' finance for renewable energy projects – online platforms to offer equity and/or debt based investments to the public at large); 'institutional investment in green infrastructure' (e.g. pension funds, insurance companies); 'corporate' and 'private wire' PPAs (contractual arrangements whereby an organisation buys electricity for its own use more or less directly from specific generators). These fields are interconnected and can overlap creating 'space' for social innovation and changing social relations around energy. For example, while crowdfunding platforms have been used by CE projects, the two are clearly distinct developments in regard to financing renewable energy. The majority of investments on Abundance (for example) have not been community projects, even if they have community benefits. However, one finds actors in both fields with a leading interest in using financing relationships (of equity or debt) as a means of engaging the public with a climate/renewable energy agenda.

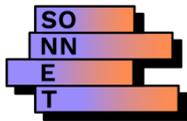
5.4.2.3 How (if so) have the SIEs and their SIE-fields and 'outside' institutional environment been shaped by these events, external shocks, trends and inter-field interactions (now and in the past)?

The trends described in 5.3.2.2 shaped the SIE-field by having a direct influence on financial and subsidy mechanisms for wind and solar and on social relations around them. The emergence of crowdfunding platforms led to adoption of a new financial mechanism that provides finance for renewable energy generation projects. This also meant changing role for e.g. citizens who can become investors in renewable energy projects. The other trend related to local governments taking a greater role in the provision of energy services that led to a growing role of LAs in financing renewable energy projects, including some novel mechanism such as Community Municipal Investment.

The wider societal trend for companies to make commitments in relation to climate and renewable energy also affect markets and contractual arrangements for renewable energy; e.g. this trend has been one of the main drivers of demand for long term PPAs with renewable generators.

5.4.2.4 What have been the most important alliances/ networks/ collaborations of SIE-field-actors and/ or other field-actors that emerged from these events, shocks, trends, and inter-field interactions (when, how and for what reasons)?

Networks in the SIE-field were not usually based on particular events, shocks or trends but rather around shared ideas (e.g. community energy). One example of a network that can be seen as resulting from a trend (and an idea) of crowdfunding is the UK Crowd Funding Association (UKCFA). It was founded in 2013 to represent this young industry, as several crowdfunding platforms financing other sectors were in operation by this point; however, crowdfunding is a bigger phenomenon and is not limited by the SIE-field i.e. financing for renewable energy. The question seems less relevant to this case study.



5.4.2.5 How has the SIE-field co-evolved with the policy context (if so) (and what was the relative importance of the urban, regional, national and European level)?

The FS RE case study demonstrates that the financial mechanisms and subsidies for renewable energy in the UK are largely framed by policy and regulation. This means that the actors' ability to act is limited, i.e. power is more constrained and circumscribed. The most important policies and policy-making relevant to the SIE-field has been happening at the **national level**. This manifested, first of all, in **subsidy schemes** for renewable energy. At launch the subsidies usually played an enabling role; their closure was an impeding factor for the renewable energy sector.

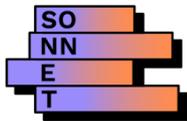
The most widely discussed subsidy is the Feed-in Tariff (FIT) scheme launched in April 2010. It supported renewable generation installations of up to 5MW capacity by mandating that electricity suppliers provide an inflation indexed payment per kWh generated. While the FIT made new renewable energy projects viable for community groups, and community shares made equity raises simpler, groups still faced the difficulty of funding the risky pre-final investment decision (FID) stage of projects, especially where planning permission was required. In 2009-10 the Scottish government introduced its Community and Renewable Energy Scheme (CARES) to support these risky stages of CE schemes. The Welsh Government introduced a similar scheme — Ynni'r Fro — in 2010. In November 2011, it was announced in the Treasury's autumn statement that a £15m RCEF would be established which, like CARES, would provide grants and loans to help fund the pre-FID development of rural CE projects.

The FIT created new opportunities for CE projects, along with the government's 'Community Energy Strategy' 2014 and UCEF which offered grants and loans for pre-planning development work.

The important changes to the support schemes for renewables that significantly affected the SIE-field include: the government's announcement in May 2014 of the closure of Renewables Obligation to solar PV installations over 5MW at the end of March 2015; this led to a rush of installations in the first quarter of 2015 as developers tried to meet the deadline. Further cuts to FIT in 2015 particularly affected CE: many projects were put on hold or cancelled, because of the government policy announcements. A further blow for CE specifically came in July 2016 the UCEF was shut down early.

Over the period covered in the report, the government subsidy policy for renewable energy has changed dramatically. The cuts to support for renewable generation was a 'shock' for the actors active in relation to renewable energy. For some crowdfunding platforms this meant diversifying away from wind and solar PV. For community renewables it meant a serious slow-down in the formation of new groups and a move towards buying up existing operational renewable projects over constructing new ones. In the case of corporate and private wire PPAs, it was been cited as a possible reason for increased activity.

Another important policy that affected renewable energy generation was about tax relief structures/venture capital schemes and certain energy generation activities: in 2015 the government excluded subsidised generation of renewable energy by CE organisations and activities from Enterprise Investment Scheme (EIS), Seed EIS (SEIS), and Venture Capital Trust (VCT), and from the future enlargement of Social Investment Tax Relief (SITR). These tax relief structures (EIS, VCT) played an important part in building the financial justification for investment in solar projects in the UK.



5.4.2.6 How are power relations (such as inequality, exclusion, oppression, exploitation, injustice) being transformed and/ or reproduced by the SIE-phenomenon under study? (and vice versa – how are SIEs enabled and impeded by power relations?)

These questions were not explored in detail in the case study.

5.4.2.7 Reflections on the main research question (based on answering the minor ones)

No additional reflections needed.

5.4.3 What are the enabling and impeding factors for the SIE-field-actors and other field actors to conduct institutional work and change the ‘outside’ institutional environment?

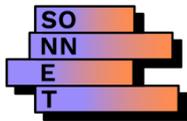
5.4.3.1 How, why, and where do SIE-field-actors and/ or other field-actors conduct activities linked to creating, maintaining and transforming institutions?

The FS RE case study illustrates how SIE can influence and shape the outside institutional environment. New financial mechanisms were changing **normative and cognitive institutions** around renewable energy generation. For example, creating an investment-based crowdfunding platform to finance renewable generation projects allowed engaging more people directly in the business of wind and decarbonisation that would build understanding and a greater pool of advocates for the technologies involved. The crowdfunding field also illustrates how wider developments can enable institutional work: e.g. Abundance faced a tough time getting FSA authorisation when they were starting up, but a few years later the (successor) FCA was very receptive to the idea of creating an IFISA in which crowdfunded debentures could be included. While the greater maturity of the crowdfunding industry was likely part of the reason for this, it was also noted that the government and the FCA was keen to diversify the UK’s provision of debt financing in the wake of the financial projects — particularly for projects in the ‘real’ economy.

One striking phenomenon in the case study is SIE-field-actors voluntarily, and with considerable extra work, placing themselves under a tighter regulatory regime, because of the public beliefs and expectations attached to that status. We see this in Energy4All’s decision to use Financial Services Authority (FSA) regulated issues of transferrable shares rather than community shares, and in the work, Abundance did to attain FSA regulation (e.g. it would have been possible for Abundance to use a different model and avoid the need for obtaining FSA authorisation but going down ‘the regulated route’ would help engage the broad population and is more attractive to ‘the ordinary investor’ (FM_UK01)).

Establishing new mechanisms, e.g. to provide bridge finance to help communities acquire renewable projects, is another illustrative example of **institutional work** conducted by SIE-field-actors. When the facility, trading as Leapfrog Finance (launched in 2015) started, there was nobody offering the same facilities. Leapfrog Finance example stimulated other similar organisations to look at this opportunity/mechanism (e.g. Thrive Renewables, Power to Change).

One of the most important types of institutional work are the various forms of **advocacy and lobbying** by SIE-field-actors in attempts to shape the policy framework/ regulations in the SIE-field. In FS RE case, we saw this e.g. in the lobbying for the FIT, and in the efforts to make provision for small and medium scale independent generators when the electricity market reform policy was being formulated – with the Cooperative group commissioning independent research on the



effects of the suggested policies on CE, on behalf of a wider collective, while the Solar Trade Association voiced its support for similar policies.

There are examples when the government performed as an institutional entrepreneur in the SIE-field creating **new institutions** and changing existing ones. For example, a public Green Investment Bank (GIB) was launched in 2012 (priority sectors were offshore wind, waste recycling, waste-to-energy, and non-domestic energy efficiency with at least 80% of investment targeted towards them). The changes to subsidy mechanisms and other policies that affect financing and investment for renewable energy also illustrate the institutional work by the government.

Activities related to **maintaining institutions** were less observed in the case study. One example is the attempt of energy cooperatives to preserve their status. Legislation in 2010 and 2014 had introduced Cooperatives and Community Benefit Societies as the successors to Industrial and Provident Societies. A change in the regulation of Cooperatives in 2014 caused disruption and was particularly disturbing to some existing energy cooperatives. In brief, community benefit societies exist for the benefit of the community while cooperatives exist for the benefit of their members. The difficulty arose when the Financial Conduct Authority stopped allowing energy cooperatives to register as Cooperatives in 2014 and questioned the legal status of those which already had.

5.4.3.2 Who is involved in conducting institutional work (and who is not, and why not)? Which actors benefit from this work (or not)?

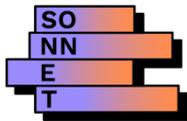
All key SIE-field-actors are involved in conducting institutional work. For example, two SIE-initiatives discussed in detail in FS RE case study – Abundance and Pure Leapfrog – introduced new financial mechanisms for renewable energy that were changing normative and cognitive institutions around renewable energy generation; they demonstrated new opportunities for renewable energy finance and proved them as working models.

As financial and subsidy mechanisms is a highly regulated field and is framed by existing policies (including anticipated policy changes), the government was actively involved in conducting institutional work throughout the history of the SIE-field, through policies and regulation, e.g. subsidy mechanisms for renewable energy such as FiT and financial mechanisms such as Green Investment Bank. The attempts of actors to influence government policy (often as a collective voice) in favour of those involved or invested in renewable energy generation projects is another example of conducting institutional work.

5.4.3.3 What have been the most important activities linked to creating, maintaining and transforming institutions? Outline these activities through describing 2-4 examples.

The activities in relation to subsidy mechanisms for renewable energy are probably most important for the SIE-field as government support for alternative sources of energy has been crucial for development of the sector. The use of subsidies to renewables is motivated by the need to address market failures, such as to address the price disparity with fossil fuels; they have been credited with increasing innovation, lowering costs, and expanding the energy mix. In the UK, subsidies have led to a significant increase in the deployment of renewables, leading to a rapid decrease of the cost of some of these technologies. Over the period covered in the case study, the government subsidy policy for renewable energy has changed dramatically. One of the most widely discussed mechanisms is FIT; its launch, subsequent changes/cuts are closely linked to creating and transforming institutions.

Establishing new mechanisms, e.g. crowdfunding for renewable energy projects, is another example of institutional work conducted by SIE-field-actors which is deemed as an important development for the SIE-field (mainly activities



linked to creating and transforming institutions). A crowdfunding start-up, Abundance Generation, became the first platform to receive authorisation from the Financial Services Authority and was also the first platform in the UK focused on raising capital for renewable generation projects, which it did through crowdfunding debentures — a form of debt capital (Candelise, 2016). Another renewable generation focused platform, the Trillion Fund, was founded in the same year. This platform was a "hybrid" — allowing crowdfunding of equity, including community shares, as well as debt financing. It launched in 2013, in the same year as Gen Community (a platform focussed on community share raises for renewables) and EtheX, another hybrid platform for organisations with "a clear social mission" which has raised funds for a number of renewable energy projects (Candelise 2016).

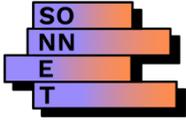
5.4.3.4 What forms do these activities linked to maintaining, creating and transforming institutions take (e.g. emotion work, boundary work, strategy work, practice work and/ or values work)? [Link back to the 2-4 examples](#)

The activities linked to maintaining, creating and transforming institutions take various forms. Three most visible are strategy work, practice work and values work. One obvious example of strategy work is government policies which are designed with a particular anticipated effect/ vision based on assumptions about the state of the industry and its needs, as well as the desired direction for future development. E.g. FiT was introduced in order to promote renewable energy generation of a particular type/ scale which was not financially viable at the start. Once the uptake became high and the costs of some renewable energy technologies went down (like solar PV), the subsidy was reduced and eventually removed. Another example of strategy work is the declaration of a 'climate emergency' made by many UK local authorities in 2019 which helped Local Authority energy teams in making their case for municipal energy projects. Practice work in the SIE-field was performed for example by those who set up new forms of finance mechanisms for renewable energy; it was also performed by those who adopted these new practices (such as crowdfunding for renewable energy projects). Values work is particularly prominent in community segment of the SIE-field. Boundary work is also performed – usually through inclusion/exclusion, e.g. defining the eligibility criteria for a particular subsidy or a financial scheme (e.g. eligibility for FiT or Rural Community Energy Fund).

5.4.3.5 What factors have enabled and/or impeded institutional work? E.g. Resources, learnt lessons and competences connected to actors/ alliances/ networks/ collaborations. [Link back to the 2-4 examples](#)

The regulatory framework played both, an **enabling** and an **impeding** role, in relation to institutional work conducted by SIE-field-actors. Besides subsidy mechanisms, other important policies that affected renewable energy generation were about tax relief structures/ venture capital schemes and certain energy generation activities: in 2015 the government excluded subsidised generation of renewable energy by CE organisations and activities from Enterprise Investment Scheme (EIS), Seed EIS (SEIS), and Venture Capital Trust (VCT), and from the future enlargement of Social Investment Tax Relief (SITR). These tax relief structures (EIS, VCT) are designed to incentivise investment in new enterprises and played an important part in building the financial justification for investment in solar projects in the UK.

The crowdfunding field illustrates how wider developments can enable institutional work: Abundance faced a tough time getting FSA authorisation when they were starting up, but a few years later the (successor) FCA was very receptive to the idea of creating an IFISA in which crowdfunded debentures could be included. While the greater maturity of the crowdfunding industry was likely part of the reason for this, it was also noted by a participant that the government and the FCA was keen to diversify the UK's provision of debt financing in the wake of the financial projects — particularly



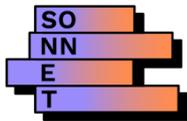
for projects in the 'real' economy. The expertise brought by financial institutions and organisations to renewable energy sector was an enabling factor for creating/ adopting new financial mechanisms in the SIE-field.

5.4.3.6 What have been intended and unintended effects (i.e. contributions) derived from conducting institutional work? What influence have they had on SIE-field and 'outside' institutional environments? Link back to the 2-4 examples

The **intended effect** of institutional work such as creating new financial mechanisms and practices was e.g. the adoption and dissemination of such practices by SIE-field-actors, their legitimisation, and as a result, the new sources of finance for renewable energy generation projects. An example of **unintended effect** derived from institutional work could be the impact of subsidy cuts on the confidence of investors, which made them question the commercial viability of renewable energy projects, as well as an impact on e.g. CE generation capacity which dropped following the subsidy reductions/cuts.

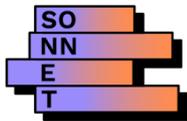
5.4.3.7 Reflections on the main research question (based on answering the minor ones)

No additional reflections needed.

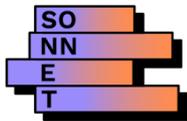


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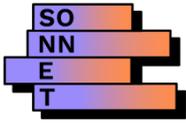
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7 APPENDIX: THREE CASE STUDY REPORTS

Each case study has the following structure:

- ▲ Key insights
- ▲ Introduction to the SIE-field
- ▲ Timeline of the development of the SIE-field
- ▲ Historical account of the emergence and development of the SIE-field
- ▲ Conceptual boxes (blue boxes)
- ▲ SIE-initiatives (other boxes)
- ▲ Recommendations for our city partners, national and EU policymakers and SIE practitioner
- ▲ List of references
- ▲ Description of methodology
- ▲ More detail SIE-field timeline