Exploring Social Value in the Context of Nationally Significant Infrastructure Projects:

A Case Study of Hinkley Point C

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Executive summary

Social Value is a rising policy agenda, and was formalised in UK legislation by the Public Services (Social Value) Act 2012. It refers to social, economic and environmental benefits whose value is not captured in financial flows. Measuring Social Value is useful for policymakers and public bodies who need to account for spending decisions, funders who want to direct their money to the most beneficial projects, and funding recipients who wish to demonstrate positive impacts. Whilst multiple tools and methodologies are available to measure Social Value, there is little consensus on which method is best to use in different contexts, and how 'soft outcomes' such as quality of life can best be captured.

This report – the result of an academic secondment hosted by EDF Energy – considers how best to measure Social Value in the context of major energy infrastructure projects, using Hinkley Point C (HPC) nuclear power station as a case study. HPC is currently under construction in Somerset, South West England. Once completed in 2025, it will have the capacity to generate enough low carbon electricity to supply six million homes, approximately 7% of the UK's total electricity demand. Whilst projects of this size bring benefits such as creating jobs and stimulating the local economy, they also entail various impacts on local communities. The HPC project therefore includes a £20 million community fund which aims to mitigate its impacts and to generate Social Value within the local area.

The key aim of this report is to understand how Social Value created by the HPC community fund can best be measured, with a view to informing how it can be both evaluated and maximised in future spending on this and other nuclear projects. The wider socioeconomic impacts of the HPC project are beyond the scope of this research. The conclusions of the report also have relevance to the wider energy sector in terms of how Social Value is considered in the context of other major infrastructure.

A unique characteristic of this report (and the wider Energy-PIECES project of which it is a part) is that it deliberately gathers and utilises insights from Social Sciences and Humanities (SSH) disciplines, which historically have been overlooked in energy policymaking. By bringing in new voices and perspectives to energy policy debates, fresh ways of thinking and generating solutions can be catalysed. Inspired by these SSH perspectives, and the wider research in this report, key recommendations are as follows:

1. **Build consensus on how to measure Social Value in the context of major energy infrastructure.** A key challenge is that there are multiple ways to measure Social Value, and the array of available tools and approaches leads to fragmentation. Whilst there are reasons for this diversity, a common approach across major energy infrastructure would be helpful to developers, decision-makers and the public in understanding the costs, benefits and trade-offs of different projects.

2. **Use a framework that is flexible to circumstances.** Because what Social Value 'looks like' varies between contexts, measurement frameworks must be flexible and adaptable e.g. by having an open section where specific relevant measures can be added by stakeholders. A combination of qualitative, quantitative and financial measures will be appropriate in most cases.

3. **Involve stakeholders throughout the process, from planning, implementation to evaluation.** Value is subjective, relational, contingent and contested. It varies between contexts, and even within contexts. This means that all relevant stakeholders must have meaningful participation in all stages of the process, so that what is most valuable to *them* can be understood.

4. **Allocate sufficient resources for Social Value analysis.** A key barrier to Social Value analysis is the resource intensity of the process. Funders should provide adequate additional funding to cover the staff and resource costs of measuring and reporting Social Value. This would help to ensure that funds allocated to *delivering* Social Value are not diverted into measurement and reporting.

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1. Introduction

Figure 1. *Hinkley Point C nuclear power station construction site in Somerset, South West England, built by EDF Energy*

Whilst there is no single authoritative definition, Social Value broadly refers to the social, economic and environmental benefits of a project, policy or organisation that are valued by stakeholders but don't have market (i.e. financial) values. This report considers how Social Value can be measured in the context of major energy infrastructure projects such as Hinkley Point C (HPC) nuclear power station, currently being built by EDF Energy in Somerset, South West England. Large infrastructure projects such as HPC are often required by UK planning laws to provide funding to mitigate impacts on local communities; it is important for decision-makers, developers and communities to understand the Social Value that can be created by such funds in order to identify how benefits can be maximised.

The research presented in this report will be utilised by EDF Energy to understand how Social Value creation can be measured and maximised in relation to HPC's £20 million community fund, as well as informing how Social Value is considered in relation to future nuclear developments such as the Sizewell C project in Suffolk. This work also has wider applicability to other major infrastructure projects which seek to measure and maximise Social Value, in the energy sector and perhaps beyond, from either a policy or practitioner perspective. From an academic point-of-view, researchers interested in how (social) disciplines that are not traditionally associated with energy research can tangibly contribute to topical energy policy issues may also find this report a valuable resource.

This report is the output of an early-career academic secondment hosted by EDF Energy, which took place over six weeks between January and March 2019. It is part of the Energy-PIECES project (*Energy Policy Insights from Early Career Events and Secondments*), co-ordinated by Anglia Ruskin University's Global Sustainability Institute (GSI) alongside the University of Cambridge's Centre for Science and Policy (CSaP). The project is funded by the Engineering and Physical Sciences Research Council (EPSRC), via the UK Energy Research Centre's (UKERC) Whole Systems Networking Fund.

A key aim of the Energy-PIECES project is to gather insights from Social Science and Humanities (SSH) disciplines to directly address particular energy policy problems. This report therefore considers how best to measure Social Value in the context of major energy infrastructure from SSH perspectives, aiming to catalyse insights from SSH disciplines on how this policy problem could be addressed. The set of all six Energy-PIECES reports, together with an editorial, are available on the UKERC website..

The remainder of this report is structured as follows. Section 2 provides background context to current policy debates around Social Value in the UK, and to the HPC project. Section 3 outlines key SSH perspectives on measuring Social Value in the context of major energy infrastructure. Section 4 reviews key approaches and challenges to measuring Social Value. Section 5 presents case studies of Social Value in relation to the HPC community fund. Section 6 summarises key conclusions of this research and offers solution-oriented recommendations. Section 7 provides acknowledgements and Section 8 contains all references used in this report. Section 9 (Appendix 1) further contains an annotated bibliography which signposts and briefly outlines useful resources on Social Value, including items covered in the report as well as further resources for those wanting to explore this topic in more detail. Section 10 (Appendix 2) presents an adapted version of the National TOMS Framework (an existing Social Value measurement tool), which could be used by EDF Energy to measure Social Value in the context of the HPC community fund, and provides guidelines for how it should be applied.

2. Background context

2.1. Social Value policy in the UK

All organisations – whether in the public, private or third sector – recognise the importance of achieving value for money. However, it can be difficult to quantify what 'value for money' means given there are many things that society values which cannot be easily expressed in financial terms. For example, living near a park may enhance the well-being of community members, or having the opportunity to socialise may create a sense of happiness and belonging for isolated people. A common way of describing these intangible benefits to society is in the language of 'Social Value'. It is increasingly seen to be helpful to try to capture these types of value to inform funding decisions, despite the challenges of doing so, in order to effectively allocate resources and to maximise benefits.

For public sector organisations in the UK, maximising value for money has become an even higher priority in the context of austerity measures following the financial crisis in 2007/08, and subsequent economic recession. Against this backdrop, the Public Services (Social Value) Act 2012 was passed by the UK parliament and came into force on 31 January 2013. This requires public bodies to 'have regard to economic, social and environmental well-being in connection with public services contracts; and for connected purposes' (UK Parliament, 2012). The main objective of this legislation is to encourage public sector organisations to take account of the wider societal benefits that can be achieved through their commissioning and procurement processes. There is no definitive list of what these benefits should be, and thus decisions can be made to fit the local context and needs. Whilst the Public Services (Social Value) Act 2012 only applies to public authorities[1], the broader Social Value agenda has also been recognised and adopted by many commercial organisations (Social Enterprise UK, 2019).

As the practice of measuring and reporting Social Value becomes more widespread, a key policy problem arises: how can Social Value be measured in a meaningful, consistent and comparable way? In the context of energy infrastructure, can Social Value be created to offset all of the various impacts associated with large complex projects, and if so how? It is generally accepted that what is 'valuable' is highly context specific, and that the type of value generated in one instance may be very different to that of another. How can Social Value creation therefore be consistently measured and reported across large energy infrastructure projects? This is the policy problem which this report seeks to address using insights from SSH disciplines, focusing on HPC nuclear power station as a case study.

1 The Public Services (Social Value) Act 2012 applies to all English and some Welsh public bodies including local authorities, government departments, NHS Trusts, emergency services, and housing associations.

2.2. Hinkley Point C nuclear power station

Once complete (scheduled for 2025), HPC will have the capacity to generate enough low carbon electricity to supply six million homes, approximately 7% of the UK's total electricity demand. It is located in Somerset in South West England, on the south side of the Bristol Channel inlet. The construction site is 430 acres (equivalent to 325 football fields), reducing to 165 acres when complete. During peak construction the project is expected to employ up to 5,600 workers, reducing to around 900 once the power plant is operational (expected to be for 60 years). It is classified as a Nationally Significant Infrastructure Project (NSIP), which is the way that the planning regime in England and Wales denotes major infrastructure developments such as energy, transport and water projects, as established by the Planning Act 2008. In total, the project is expected to cost around £20 billion.

During the planning phase of HPC, a £20 million community fund was agreed between EDF Energy and the relevant Local Authorities: West Somerset District Council, Sedgmoor District Council and Somerset County Council. This is one part of the project's Section 106 (S106) agreement under the Town and Country Planning Act 1990. S106s are mechanisms designed to "make a development proposal acceptable in planning terms that would not otherwise be acceptable" (Local Government Association, 2019). For example, by providing funding towards local services this can help to offset the negative impacts of a development, thereby rendering a proposed project 'acceptable' to the decision-making authority. Whilst S106 agreements are generally not regarded as perfect (see e.g. Aitken, 2010 and Burgess et al., 2011 for further details), they nonetheless help to redress some of the impacts of major infrastructure.

As a result of dialogue between EDF Energy and the relevant Local Authorities, HPC's S106 agreement specifies a number of thematic areas to be addressed including: accommodation and housing, community safety, economic development and tourism, education, and health. Funding from EDF Energy is provided for

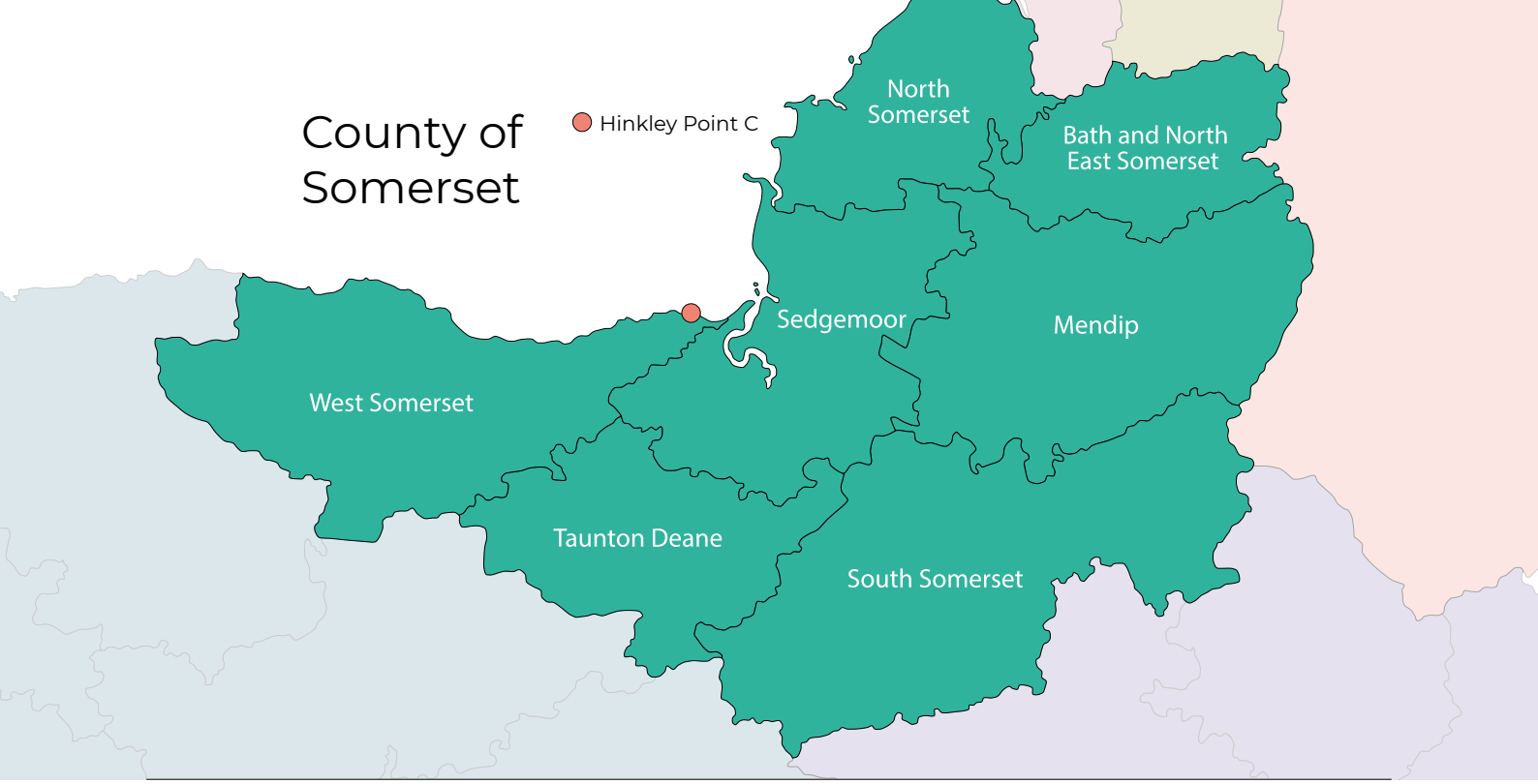

Figure 2. *Local Authority Districts in the non-metropolitan county of Somerset (i.e. the area of benefit for the HPC community fund), and approximate location of the HPC nuclear power station site (not to scale)*

each of these areas to mitigate these impacts; the £20m community fund is designed to address impacts *beyond these thematic areas i.e. 'intangible and residual impacts'* (Herbert Smith LLP, 2012) that can't be directly addressed through standard mitigation measures. The agreement specifies that funding should go towards 'schemes, measures and projects which promote the economic, social or environmental well-being of [communities in Somerset] and enhance their quality of life' (Herbert Smith LLP, 2012). Thus, by its nature the HPC community fund is intending to create Social Value; also by its nature, it seeks to address 'intangible and residual' impacts, making measurement (and especially quantification) of this value particularly difficult.

Although initial work and investigation into measuring Social Value creation as a result of the HPC community fund has begun, there is limited research and academic understanding of how the outputs of these formal measures can be captured, analysed and improved in the context of major energy infrastructure. The next section of this report outlines key SSH perspectives on this policy problem, before reviewing four methodologies for measuring and quantifying Social Value: Outcomes approaches, Social Cost Benefit Analysis, Social Accounting and Auditing, Social Return on Investment. The following section considers Social Value creation and measurement in relation to two case studies of grants awarded through the HPC community fund. It should be noted that the scope of this report is to consider Social Value creation of the £20m community fund specifically[2], rather than the wider socioeconomic impacts of the HPC project or other measures contained within the S106 agreement which are designed to mitigate these impacts.

Figure 3. *Artistic impression of the HPC nuclear power station when complete*

2 The HPC £20m community fund is separated into two tranches: the £7.2m Community Impact Mitigation (CIM) fund which was administered by West Somerset Council from 2012 to 2018, and the £12.8m HPC Community Fund (CF) administered by Somerset Community Foundation from 2018 until the date of commissioning of the power station (including both nuclear reactors being constructed, expected to be 2025). At the time of writing (March 2019), approximately half of the overall £20m fund had been allocated, including the full CIM fund. For simplicity, this report considers the two tranches collectively and refers to them as the 'community fund'.

3. Social Sciences and Humanities perspectives on Social Value

Social Sciences are broadly interested in how society is organised and the relationships between individuals and social groups; Humanities are focused on the documentation and expression of human experience, for instance in cultural representations and activities, and often ask questions about morality and ethics (Foulds et al., 2017). Social science disciplines thus include anthropology, economics, human geography, political science, and sociology; humanities include history, literature, philosophy, and cultural studies (though there is sometimes a blurred line between which disciplines are considered which). The Social Sciences and Humanities (SSH) differ from the Natural Sciences both in terms of content and method, though there are areas of overlap such as in economics and psychology. Whilst Natural Sciences typically take an experimental approach to observing a physical phenomenon, SSH disciplines are less able to use repeatable experiments as they are interested in social dynamics which often cannot easily (or ethically) be controlled. SSH disciplines therefore tend to take a more critical, interpretivist approach which foregrounds the researcher's subjective (though informed) interpretation of the data.

This section of the report outlines various ways in which SSH researchers may think about the policy problem of measuring Social Value in the context of major energy infrastructure projects. It is increasingly recognised that SSH disciplines can make important contributions to energy policy debates given the various social and cultural dimensions of energy supply and demand (Delina and Sovacool, 2018; Robison and Foulds, 2017). Whilst there are multiple SSH perspectives which are relevant to this policy problem (a few of which are expanded upon here), there is currently little scholarly research directly focused on Social Value in the context of energy infrastructure, meaning this report represents an early attempt to bring together current academic thinking on this topic.

Ahead of the secondment for which this report was written, the Energy-PIECES project organised a masterclass in December 2018 with SSH early career researchers which included discussions of the energy policy problems which were to be the topics of the project's six secondments. The outputs from these discussions (including key terms and initial references) were used to develop the themes or 'perspectives' that are covered in this section. These were identified by inductively coding the notes taken by the participants and facilitator during the masterclass i.e. they emerged from the raw data, rather than being identified beforehand then searched for in the data. These perspectives (see Figure 4) provide the basis for this section, with added insights from a wider review of related academic literature.

Key Social Science and Humanities (SSH) perspectives on measuring Social Value in the context of major energy infrastructure, as identified in the Energy-PIECES masterclass with SSH early career researchers:

- Value, values and valuation (i.e. what matters to people, how can this be measured)
- Socio-economic and environmental impacts of energy infrastructure (including the spatiality and temporality of these impacts and their mitigation measures)
- Social acceptance of energy infrastructure and public participation in decision-making

Figure 4. *Key Social Science and Humanities (SSH) perspectives on measuring Social Value in the context of major energy infrastructure projects*

3.1. Value, values and valuation

Concepts of value, values and valuation are the subjects of long-standing critique and debate in various SSH disciplines. Ancient philosophers since before Aristotle have grappled with the role(s) of personal values in ethics and morality, and economists have a long tradition of thinking about value as a basis for resource allocation (Brown, 1984). The language of value, values and valuation is also commonly used in non-academic settings such as politics, business and the media. The subtle variation in usages and definitions of key terms across these domains can make debate in this area difficult to follow. The following bullets therefore seek to define these terms in an accessible way, in order to ensure a common understanding of the language being used throughout this report.

- **Value** is the worth that is ascribed to an object or outcome by an individual or by society. This is usually informed by people's preferences i.e. what they consider *better* or simply *like* more than an alternative. This is known as **preference-based value**.

- These preferences form the basis of what the economist Thomas C. Brown calls '**held values**' (1984). Held values can either relate to modes of behaviour (e.g. honesty, loyalty), end-states (e.g. freedom, happiness), or qualities (e.g. beauty, fairness).

- Collectively, held values combine to form a '**value system**'. Much work has been done on held values and how consistent they are across societies and contexts, most notably Shalom H. Schwartz's theory of basic human values (Schwartz, 2012).

- Held values (which are internal) can be distinguished from '**assigned values**', which are 'the expressed relative importance or worth of an object to an individual or group in a given context' (Brown, 1984, p. 233). The process of generating an assigned value (i.e. an *external* expression of the importance or worth of an object or outcome) is called **valuation**.

- In a market context, the process of valuation produces an assigned value in terms of **price**. For non-tradable goods or services, **financial proxies** can be estimated using various techniques, such as contingent valuation.. For example, the value of a local park to a community could be estimated by measuring the time and travels costs incurred by visitors (i.e. the travel cost method). Alternatively, valuation of the park could be achieved through counting the number of visits (i.e. **quantitatively**), or by asking local people their opinion of the park and why it matters to them (i.e. **qualitatively**).

- The language of '**relational values**' refers to the value assigned to people's relationships with things, rather than the things themselves (Chan et al., 2016). This is a burgeoning area of scholarship, stemming from scholarly dissatisfaction with the dichotomy between held and assigned values (see Chan et al., 2018). Some argue that this is a necessary distinction because in some cases it is a *relationship* that is valued (e.g. the fact that a person lives near to a park and can use it to support their well-being), not an object or outcome (i.e. the park itself).

As can be seen, the concepts of value, values and valuation are extremely interlinked. The value assigned to something is linked to people's underlying values, and how that value is assigned depends very much on the process and purpose of valuation. As Brown emphasises: 'There is no such thing as the value of an object. This is true both because assigned value is a relative, not an absolute, concept and because assigned value reflects the context in which valuation took place and the perception and held values of those assigning value" (1984, p. 244). For example, physical and emotional variables could affect the value assigned to something, such as the setting of an interview or the participant's mood when answering a question. Thus, value is not only subjective, but is constantly being reshaped, negotiated and contested. This leads to questions of whether it is possible, or even desirable, to assign a (fixed) monetary value to something that might be described as 'Social Value', which in turns feeds in to the long-standing academic debate between quantitative and qualitative research methods.

Whilst not mutually incompatible, quantitative and qualitative methods[3] each have their own logic and way of approaching research problems. Quantitative research usually aims to establish general laws and assumes there to be a common trend across different settings and contexts, which can be discovered by testing theories and using the data to support or reject hypotheses. Qualitative research, on the other hand, tends to assume that situational context is fundamentally important and is therefore more interested in understanding a phenomenon from a particular person or group's perspective (Minchiello et al., 1992). Thus, when considering Social Value in an academic way, it is important to reflect on the process and purpose of valuation, which type of research method will generate the desired results, and what assumptions are being made by choosing one or the other. Increasingly, SSH researchers use mixed methods (i.e. a combination of quantitative and qualitative methods) and may reject the dualism between these approaches, for example via the Critical Realist research paradigm (Krauss, 2005). This enables insights from both traditions to be incorporated.

3 Quantitative research methods use numerical data for their analysis (e.g. questionnaires, statistical tests), whilst qualitative methods use non-numerical data (e.g. interviews, focus groups, ethnographies/observations).

3.2. Socio-economic and environmental impacts of energy infrastructure

All energy infrastructure entails socio-economic and environmental impacts, both in the area in which the infrastructure is hosted and via its supply chains (Bridge et al., 2013; Holland et al., 2016). For nuclear mega-projects such as HPC, these impacts can be significant. There has been substantial research by SSH researchers and other academic disciplines into the impacts of nuclear power stations, along with associated uranium mining and radioactive waste disposal activities, as well as research carried out through planning and policy-related processes. These include impacts on:

- **Water quality and availability** e.g. Rashad and Hammad (2000)
- **Biodiversity conservation** e.g. Brook and Bradshaw (2015)
- **Climate change mitigation and adaptation** e.g. Kopytko and Perkins (2011)
- **Human health** e.g. Cohen (1976), Dewar et al. (2013)
- **Local economies and employment** e.g. McGuire (1983)
- **Provision of housing and public services** e.g. Glasson (2012)

Some studies consider these types of impacts specifically in relation to HPC or other nuclear power stations built at the Hinkley Point site in Somerset i.e. HPA (commissioned in 1965 and decommissioned in 2000) or HPB (commissioned in 1976 and expected to be decommissioned in 2023) (e.g. Glasson et al., 1988; Ewings et al., 1989; Jenkins et al., 2017; Smyth et al., 2018). More generic impacts associated with nuclear power development in the UK are outlined in the UK Government's National Policy Statement for Nuclear Power Generation (DECC, 2011).

From a sustainability perspective, these impacts can be thought of in terms of **different types of capital** such as human, social, economic and natural capital (Goodland, 2002). This leads into broader academic debates about **sustainable development** and how sustainability should be measured (see Blewitt, 2008). There is an increasing recognition of the impacts that the transition to low carbon energy will have on different types of capital, such as the UK Energy Research Centre's ADVENT project (*Addressing Valuation of Energy and Nature Together*). This project investigates the implications of different decarbonisation pathways for the UK's energy system for stocks of **natural capital** and the **ecosystem services** that flow from them i.e. the benefits to society that are provided by nature. This approach helps to integrate thinking on the social and environmental impacts of energy infrastructure.

Another way that an SSH researcher may think about the impacts of energy infrastructure is in terms of **'impact geographies'**. This term was coined by the human geographer Julia Haggerty and colleagues in the context of unconventional oil and gas extraction in the United States. They define impact geography as 'a spatially-bounded area that features a distinct constellation of historical, physiographic (including climate, geology and ecology), economic and cultural factors that influence the nature of oil and gas development and the character and magnitude of its impacts on local people, ecologies and landscapes' (2018, p. 621). This framework can be extended to think about impacts of other types of energy infrastructure such as nuclear power stations, and how the distinct assemblage of factors in a geographical location come together to create a specific set of impacts. This approach sits within a larger body of critical **energy geography** scholarship (see Bridge et al., 2018 for overview).

An impact geography perspective is useful in the context of HPC as it asks questions about the specific impacts that will be created in this context, and over what **spatial and temporal scales**. For instance, how was the spatial boundary (i.e. the county of Somerset) decided upon for the HPC £20 million community fund, and is this the appropriate geography? Given the lengthy construction period and 60-year lifespan of HPC, over what time scale will (and should) impacts be mitigated against? What is valued by the people who will be impacted, and what does this mean for the types of Social Value that the fund should aim to produce? It is not strictly the aim of this report to answer these questions, rather to shine light on the various ways in which SSH disciplines such as human geography may approach the topic of Social Value in the context of major energy infrastructure.

Another SSH perspective that deserves mention is **energy justice**. This framework is most often based on the three pillars of environmental justice – distributional, procedural, recognition – and uses these three dimensions to analyse justice and fairness in the context of energy issues (Heffron and McCauley, 2017). Distributional justice refers to the distribution of impacts across social groups, space and time; procedural justice refers to how people are included in decision-making processes which affect them; recognition justice refers to who is recognised as a legitimate stakeholder in these processes. This is a growing area of scholarship which builds upon **environmental justice** research dating back to the 1970s, which found that communities of colour in the United States were more likely to be exposed to environmental hazards such as toxic waste and pollution than white communities (Bullard, 1983). This research highlighted the uneven distribution of risk across social groups, and the need to better incorporate less powerful stakeholders into decision-making in order to address this imbalance. This perspective has relevance to the considerations of HPC and Social Value given that the UK planning system formally recognises that major energy infrastructure concentrates negative impacts on host communities, and uses S106 agreements to compensate for those impacts that cannot be avoided. An energy justice framework allows an understanding that the Social Value created by the HPC community fund is situated in the context of some adverse impacts, and is thus a means to distribute positive benefits to host communities alongside costs. This perspective also highlights the importance of considering who pays for energy infrastructure and how these costs are distributed fairly across society (Barrett et al., 2018).

3.3. Social acceptance of energy infrastructure and public participation in decision-making

A body of SSH literature that is closely related to that described in Section 3.2 on impacts is the literature on **social acceptance**, given that impacts are one of the factors that contribute to social acceptance of energy infrastructure. Other factors include demographic characteristics, environmental attitudes and exposure to energy infrastructure over time (Roddis et al., 2018). Social acceptance of energy technologies is separated by *Wüstenhagen et al.* (2007) into three categories:

- **Community acceptance** i.e. acceptance of specific energy projects
- **Socio-political acceptance** i.e. attitudes to energy technologies or policies at a general level
- **Market acceptance** i.e. adoption of energy technologies by users, consumers and investors

Much research has been conducted on social acceptance of nuclear power (e.g. Corner et al., 2011; Harris et al., 2018; Nguyen and Yim, 2018), and some specifically relating to the Hinkley Point complex (e.g. Parkhill et al., 2014). This latter paper explores whether the people living in the area surrounding Hinkley Point feel stigmatised by their proximity to nuclear power. Whilst this was generally found not to be the case, the authors conclude with this important comment: 'Our findings would imply that affect from stigma may begin to occur when people feel they no longer have a choice in, for example, where they live or how their landscape is changing – that is, the imposition of change [...] The extent to which siting processes of new energy developments give local people choice may thus be of high significance in whether or not their landscape and identities come to be viewed as under threat from stigma' (Parkhill et al., 2014, p. 580). This leads to another important SSH perspective on this report's policy problem, relating to public participation in decision-making regarding energy infrastructure.

An important project on **public participation in decision-making** is University College London (UCL)'s NSIPs Research Project. This research explores the specific dynamics of public participation in the NSIP planning process, which follows different processes of public involvement to other types of planning application. A major part of the NSIP planning process is the 'pre-application' stage, during which the developer must undertake extensive **consultation** with stakeholders, including local communities. This is the stage at which there is most opportunity for negotiation of measures to mitigate project impacts, as well as changes to the infrastructure project itself (UCL, 2017). This 'frontloads' the process with the intention of making it quicker, meaning there is less scope for the public to have an influence on decisions at a later stage. This is reinforced by the fact that NSIPs are typically underpinned by National Policy Statements (as is indeed the case for nuclear power), meaning there is a presumption in favour of the development to fulfil a national need. All of this means that the HPC community fund is even more important, given that local residents had relatively limited ability to influence whether or not the project went ahead. As noted by Parkhill et al. (2014), **choice** is crucial in terms of building community acceptance; if communities perceive they have little choice, the community fund may help to build **trust** between local people and EDF Energy, and thus increase EDF Energy's **Social License to Operate SLO**) – another key concept from the energy SSH literature (see Gehman et al., 2017).

Another important body of work has been led by Nick Pidgeon and colleagues at Cardiff University. This has involved two UKERC projects, 'Transforming the UK's Energy System: Public Values, Attitudes and Acceptability' and 'Societal Preferences, Affordability and Trust'. This research is an important complement to technology and site specific social acceptance studies in that it analyses public views on overall energy system change. Another UKERC project, led by Wouter Poortinga at Cardiff University, specifically explores 'Public Attitudes to Nuclear Energy'. It considers the impact that nuclear accidents such as in Fukushima in Japan has on public attitudes to nuclear technology in the UK.

4. Key approaches and challenges to measuring Social Value

4.1. Key approaches to measuring Social Value

This section reviews four key methodologies and associated tools for measuring Social Value. This field is rapidly developing and new tools frequently become available, meaning that the options presented here are only a snapshot of what is available. Methodologies refer the overarching ways of approaching measurement, whilst tools refer to specific frameworks or standards that have been developed to implement a broader methodology. Methodologies are roughly ordered in terms of their complexity (from least to most), though each have different types of complexity associated with them.

Table 1. *Summary of key methodologies and tools for measuring Social Value, including their strengths and weaknesses*

Methodology and key tool	Summary of methodology	Strengths and weaknesses
Outcomes approaches e.g. Triangle's Outcome Stars	A set of desired outcomes are identified for beneficiaries of a project or policy. These are usually reported on over time, enabling the impacts of an intervention to be tracked at the individual level.	This approach is straightforward to implement. It is best suited for frontline services who measure value on a 1-1 basis. It is adaptable and outcomes can be co-produced with stakeholders.
Social Cost Benefit Analysis (Social CBA) e.g. Greater Manchester Combined Authority's CBA model	A monetary value is estimated for all costs and benefits expected to be incurred by a project, policy or intervention (including social and environmental costs). If benefits exceed costs, there is justification to allocate resources. Typically, different scenario options are compared, usually including a baseline 'do nothing' scenario option.	Social CBA is an extension of economic CBA, which is well established and thus well understood. It has institutional support e.g. in the UK Treasury's Green Book. A key strength is that is clearly shows positive and negative impacts. A key weakness is that it assumes all costs are 'fungible' i.e. impacts on different types of capital can be interchanged.
Social Accounting and Audit (SAA) e.g. Social Audit Network's Prove, Improve, Account	A formal review of an organisation's performance against social, economic and environmental objectives. It usually has three stages: 1) Planning – the values, objectives and stakeholders of the organisation are identified; 2) Accounting – mechanisms established to gather data over time; 3) Reporting - the data is collated into social accounts which are externally reviewed/verified.	SAA follows a similar logic to Corporate Social Responsibility exercises so is readily understood by business. It gathers qualitative and quantitative data, meaning diverse types of Social Value can be captured. It also allows value to be measured over time. It is best used as an evaluation tool rather than a decision-making tool, unlike Social CBA (which can be either).
Social Return on Investment (SROI) e.g. The Social Value Portal's Themes, Outcomes, Measures (TOMS) Framework	SROI follows a similar approach to SAA, the key difference being that it assigns financial proxies to outcomes. It follows seven key principles: 1) Involve stakeholders; 2) Understand what changes; 3) Value the things that matter; 4) Only include what is material; 5) Do not over-claim; 6) Be transparent; 7) Verify the result. These were established by Social Value UK, see here.	A key strength of SROI approaches (as with Social CBA) is that financial proxies allow direct comparison between soft and hard outcomes, putting social and environmental returns on the same footing as financial ones. However, monetisation is uncertain and can vary between methods. Unlike CBA or SAA, SROI is bottom-up so is informed by what stakeholders regard as valuable.

4.2. Key challenges to measuring Social Value

Measuring Social Value is an inherently challenging process, given that it is dealing with 'soft outcomes' such as quality of life or well-being, which are by nature difficult to measure (and especially hard to quantify). The methodologies and tools outlined in Section 4.1 each attempt to overcome these difficulties in their own way, but various challenges remain that cannot be ignored – both for practitioners seeking to implement Social Value measurement, and those seeking to develop a robust and defensible methodology to enable this. Key challenges include:

- There is **no single agreed method** for measuring Social Value
- The **resource intensity** of implementing Social Value measurement
- **Attribution** of a Social Value outcome
- Measuring **longitudinal change**
- **Quantitative vs qualitative measurement** of Social Value
- Whether to assign **monetary values**
- **Specificity vs flexibility** (in terms of the framework used)

These challenges are now discussed in turn.

Given that there is no single accepted definition of Social Value, this term often means different things to different institutions. As a result, there is **no single agreed method** to evaluate it (as shown in Section 4.1). This has led to multiple methods and tools being developed, in what has been described as a 'fragmented, bottom-up and somewhat ad-hoc approach to measuring Social Value' (Wood and Leighton, 2010). The range of techniques available can lead to confusion and make it hard for organisations to know which one to use. Furthermore, approaches can vary from country to country.

The **resource intensity** of conducting Social Value measurement is another notable barrier for some organisations, both in terms of time and staff resources. Assessment often requires extensive data collection and processing, making it particularly difficult for small organisations or organisations with limited funding to dedicate sufficient resource and/or justify doing so. This gives rise to a tension between investment in *delivering* Social Value, and investment in measuring Social Value delivered. Additionally, assessment exercises often require specialist skills and knowledge which can be a limitation for some organisations. This in turn produces a tension between **usability** with **rigour** i.e. there is a trade-off between using a basic framework that is straightforward to implement, or using a more complex methodology that is more resource intensive but likely to provide more robust results.

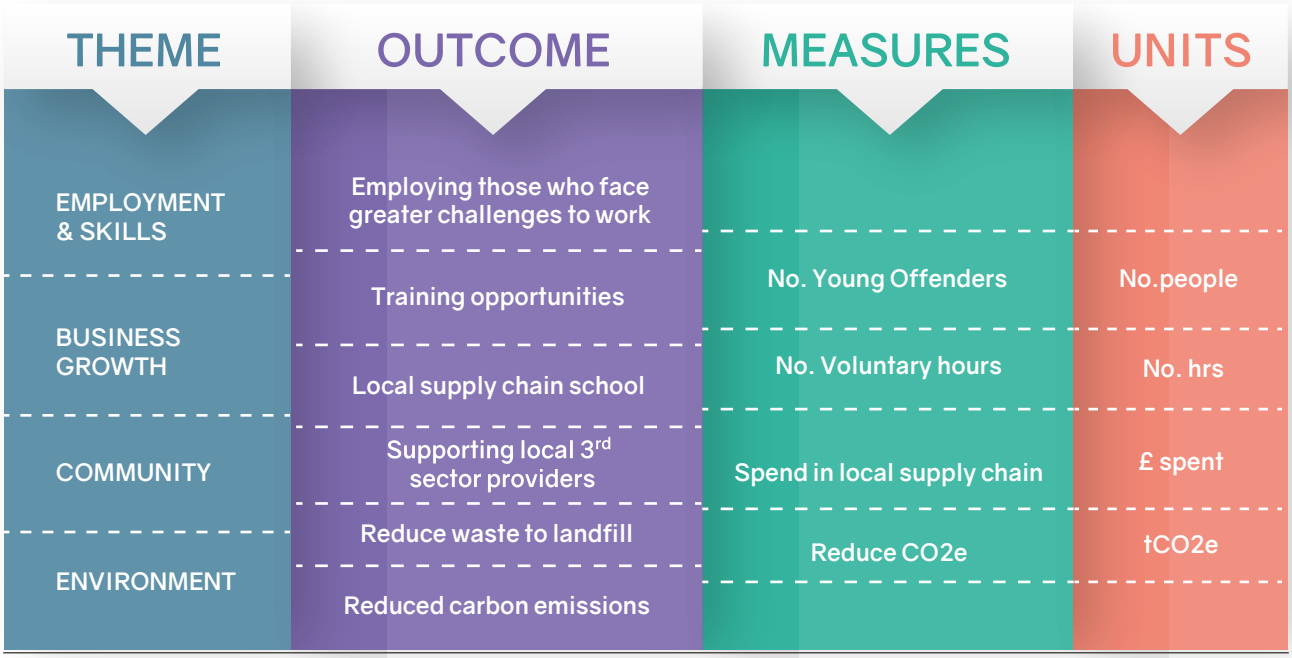

Figure 5. *Sample TOMS (Themes, Outcomes, Measures) matrix: themes are overarching issues; outcomes are objectives that support the theme; measures are used to assess whether outcomes are achieved*

Another key issue, both for practitioners and from a methodological perspective, is how to be sure that an outcome can be attributed directly to the actions of an organisation and would not have happened anyway, or through the actions of others. This is known as **additionality** i.e. whether an outcome is *additional* to the status quo. This relates to another key challenge, which is measuring **longitudinal change**. For example, it can be difficult for organisations to track outcomes over time and then to claim with any certainty that an outcome can be attributed to their intervention, rather than other factors which have occurred over that time period.

As mentioned earlier in this report, a crucial question is whether to measure Social Value in a **quantitative or qualitative** way, or both (see Section 3.1 for academic discussion). Quantitative values are (usually) easier for organisations to collect, easily reported and readily understood by external stakeholders such as funding donors. However, they often lack the ability to convey a richer story of the change that has been made by a project or specific intervention. Qualitative measures, such as case studies or personal testimonies, are better able to capture this depth, but cannot necessarily be generalised or scaled up to show broader impacts. Some methodologies, such as SAA, use a combination of quantitative and qualitative reporting to capitalise on the strengths of both.

Other methodologies seek to overcome the limitations of using quantitative or qualitative measures by assigning a **monetary value** to outcomes. A key advantage of reporting monetary values is that regardless of what tool or methodology is used to measure Social Value, there is a common currency to report impacts so they can be easily compared across sectors and by different stakeholders. However, different valuation techniques will often result in different estimated values, creating issues regarding **reliability** and the **aggregation** of estimated values to other contexts. Monetisation also can lead to under-valuation of some outcomes, for example a project which benefits 30 people with complex disabilities or additional needs may appear to be 'worth' less than a project that benefits 300 people, though the first may fundamentally change life prospects for those 30 people. Additionally, some people have **ethical concerns** around assigning monetary values to certain outcomes, such as the value of a human life. Therefore, monetisation is not always necessarily the best solution.

Finally, there is a tension between using a tool that is well suited to measuring Social Value in a specific set of circumstances, and using a tool that is more flexible and able to take account of the myriad variables of what Social Value means in different contexts (i.e. **specificity vs flexibility**). Some tools have been specifically designed for certain sectors, for example the Rail Safety and Standard Board (RSSB)'s Common Social Impact Framework for Rail. Others are designed to be universally applicable, such as the Social Value Portal's National TOMS Framework, which is based around five themes: jobs, growth, social, environmental and innovation (the latter being an open theme to recognise measures which are specific to a certain instance). Whilst standardising the frameworks used would help to ensure consistency, it is important they are flexible enough to be relevant to individual circumstances.

5. HPC community fund: Social Value case studies

This section of the report aims to 'bring to life' the key approaches and challenges to measuring Social Value reviewed in Section 4, as well as the academic perspectives outlined in Section 3. It presents two case studies of community projects which have received grants from the HPC community fund, showcasing the types of Social Value that the fund has helped to create. It also outlines the approaches taken to measuring Social Value in each case, and the key challenges encountered by grant recipients. This information was gathered by the lead researcher via semi-structured interviews with grant recipients.

5.1. Grant for a community space

This grant from the HPC community fund supported the establishment of a community space in a town close to the HPC construction site. The types of Social Value created by this project are rich and varied, including **volunteering** and **training** opportunities for young people and vulnerable adults, **support** for homeless people and rough sleepers, a **hub for community activities** and events to take place, and a space to build **community cohesion**. The latter is particularly important in the context of major energy infrastructure projects where an influx of people will often move from outside the local area to work on the project, particularly during the construction phase (which is especially long for nuclear mega-projects such as HPC which are technically demanding and complex to build). This project is therefore a good example of how community funds can help to address the 'intangible and residual impacts' of major energy infrastructure, such as community disturbance:

> *"When there is such upheaval in the community that can happen from big projects like the Hinkley project, with so many people coming into the area, what can become evident is the disconnect and friction, but the majority of people are looking for cohesion and looking for connection, but they're struggling to find how to achieve that because it is slightly daunting and it is slightly outside people's comfort zone. So a space like [the community space] and all the connection points – whether it's people volunteering, whether it's people just coming in to use the space – there are people that they wouldn't always be sharing space with sharing that space [...] It's a very non-threatening space where people can connect."*

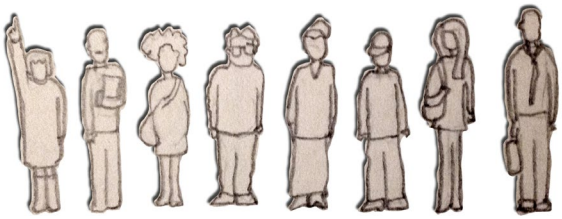

Figure 6. *The HPC community fund supports projects which provide volunteering opportunities*

This project is also a good example of how Social Value outcomes, such as **community cohesion and resilience**, can be extremely difficult to measure and report to external stakeholders. In an interview with staff at the community space, the grant recipients explained how they measure income as an indicator for the social impacts that the project aims to deliver in the community:

> *"We report weekly how much income has come through [the community space]. Not because we are a commercial enterprise, because we are non-profit making, but because it's an indication of the amount of activity that is happening. So it's quite good to keep an eye on that level, and of course it's important anyway to cover all the costs that we have. [...] It's not about how much cash flows through us, it's about how many people we've supported."*

This highlights the challenge of capturing intangible benefits, as well as the challenge for small and/or charitable organisations to invest time and resource in measuring Social Value rather than delivering it. That said, income is not the only way that the community space measures its impacts. The staff also explained that they compile **"hard data"** where possible, such as numbers of volunteering opportunities, to report on the grant's impacts. They have also compiled **case studies** of individuals who have been helped by the project, where hard data is not able to capture the full picture:

> *"The case studies are really quite informative and give a broader picture than the hard data, if people are able and willing to share. They're much stronger [...] Sometimes it will be people that have struggled with **confidence**, and [volunteering] has helped them tremendously with their **social interaction** and this has given them confidence. We do that all the time actually. If people want that experience then we'll help them, it happens all the time, but I couldn't put a numeric on it."*

This demonstrates the value of using both quantitative and qualitative measures to report Social Value, in order to gain the depth of qualitative methods with the breadth of quantitative approaches.

5.2. Grant for a health and well-being initiative

This grant from the HPC community fund supported an initiative which provides opportunities for local people to engage in sports and outdoor exercise activities, including older people and families. The activities are supported by qualified instructors and are available at an affordable cost to increase **inclusivity**. As well as directly contributing to Social Value outcomes regarding **health and well-being** such as improved fitness, this initiative also creates opportunities for social interaction and helps with personal outcomes such as increased **confidence** and **self-esteem**. The activities are based in locations which are heavily impacted by the HPC construction works, such as increased traffic flows and influx of new workers living in the areas. Thus, as well as contributing to health and well-being outcomes for long-term and short-term residents, this initiative also provides opportunities for these groups to meet and socialise in a welcoming environment, thus contributing to **community cohesion**.

A key way in which the grant recipients measure and report Social Value created by this initiative is using an **Outcomes Star**. This involves asking the beneficiaries of the project to rank on a scale of 1-10 how true that they feel a statement is in relation to them e.g. 'I feel optimistic about the future' or 'I feel part of my community' (see Figure 7). These statements can be adapted depending on the beneficiary group being targeted. A key benefit of this approach is that it can be repeated over time, enabling **longitudinal tracking** of the impact that an intervention has had on an individual. However, as mentioned in Section 4.2, a key challenge in collecting data longitudinally is the problem of **attribution** i.e. the certainty with which an organisation can claim that an outcome can be attributed to their intervention, rather than other factors which have occurred over that time. This could be helped by asking beneficiaries to assign a weighting of how strongly they perceive an outcome to be due to the initiative, though of course this approach is also subject to uncertainty and subjectivity.

Another key challenge reported by this project was the **ability to enforce completion of evaluation measures** such as the Outcomes Star framework. Whilst people tended to be happy to fill in an initial survey, it became more challenging to engage people in doing so at a later date. This often required staff to ask people to do this in person, rather than relying on digital communication, which can be time consuming and requires sensitive interpersonal skills. It can then be onerous to digitise this data in order to report it in a format required by third parties. There is also the issue of **skewed reporting**, in that people who have had good outcomes from the initiative are often more likely to be willing to complete an evaluation exercise, whereas those who are still experiencing difficulties are less able to prioritise doing so. This highlights the importance of treating self-reported data with an appropriate degree of **(un)certainty**, as well as making Social Value evaluation processes as light touch as possible whilst still collecting information that is helpful. This may mean a certain degree of **trust** should be placed in key stakeholders to faithfully report outcomes, particularly for organisations that seek to deliver Social Value as part of their core purpose and have limited financial resources and time.

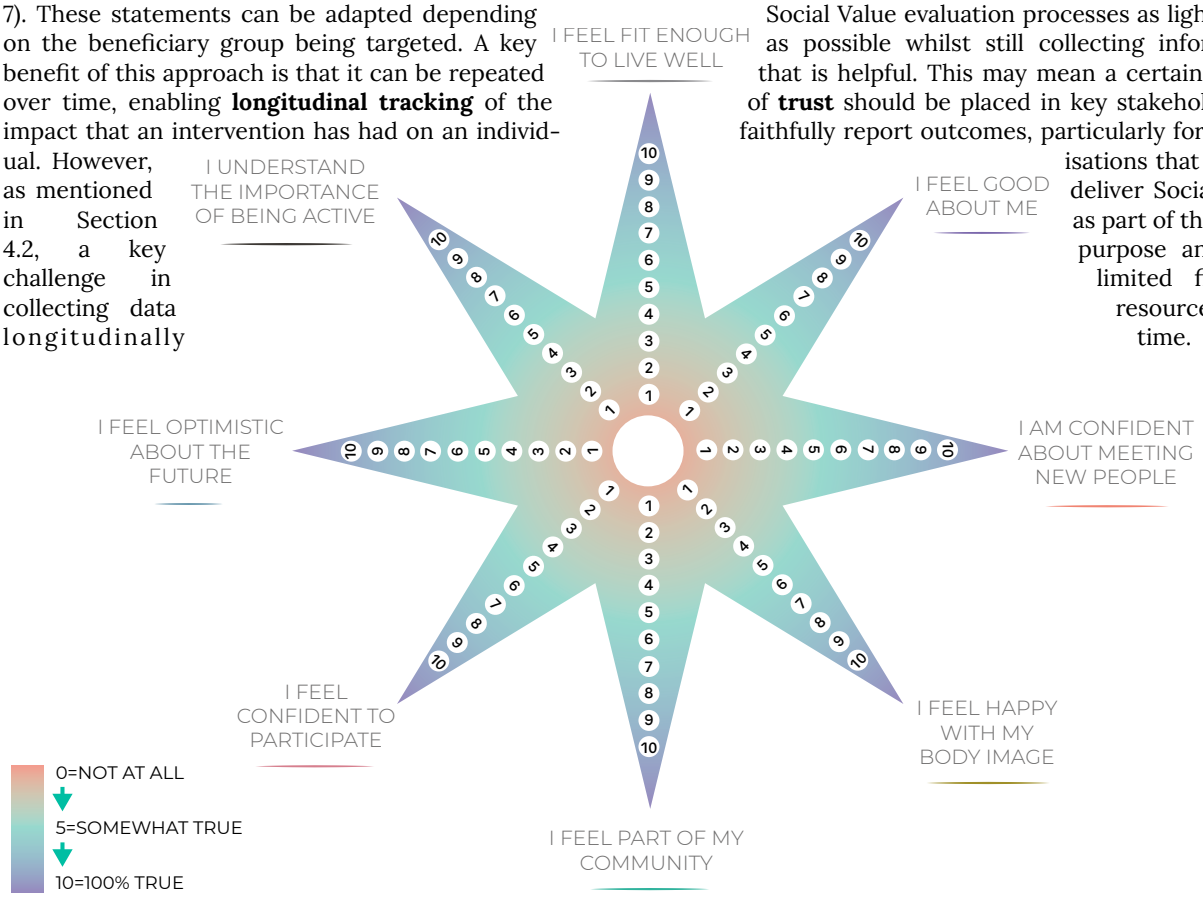

Figure 7. *Example of an Outcomes Star framework used to measure Social Value outcomes*

6. Conclusions and recommendations

This report aimed to understand how Social Value created by the HPC £20 million community fund might best be measured, informed by insights from a range of SSH disciplines. This is in response to a broader policy problem of how Social Value can be measured in a meaningful, consistent and comparable way in the context of major energy infrastructure, given the various impacts that these types of infrastructure project have on host communities. This is with a view to informing how Social Value can be measured and maximised in future spending on this and other nuclear projects, such as Sizewell C, as well as well as other types of major energy infrastructure such as wind and solar farms.

This report demonstrates that SSH disciplines offer several key insights on this policy problem and how it can be addressed, including:

- **Value is contingent and subjective.** What people value not only depends on their held values, but also on how and why value is assigned. This means that there is no one true value of something; value is constantly being negotiated and reshaped depending on circumstances.

- **What is valuable is not always tangible.** As well as valuing objects and places, people also value intangible outcomes such as confidence and self-esteem. Sometimes it is someone's relationship to something, or the relationship *between* things, that is valued e.g. the feeling of belonging to a community, or the social cohesion of the community in which someone lives.

- **Qualitative as well as quantitative methods are important.** Because Social Value is highly context dependent, measuring it often requires qualitative data such as case studies alongside 'hard' quantitative data. A combination of these approaches provides breadth and depth.

- **People need to be included in identifying and measuring Social Value.** What Social Value 'is' depends on context and what matters to individuals; it is therefore crucial to involve people in processes around how it is governed. Including people in decision-making processes (i.e. giving them choice) also helps to increase community acceptance of energy infrastructure.

Informed by these SSH insights, and the wider thinking around Social Value measurement and its challenges touched upon in this research, the key recommendations of this report are as follows:

1. **Build consensus on how to measure Social Value in the context of major energy infrastructure.** A key challenge is that there are multiple ways to measure Social Value, and the array of available tools and approaches leads to fragmentation. Whilst there are reasons for this diversity, a common approach across major energy infrastructure would be helpful to developers, decision-makers and the public in understanding the costs, benefits and trade-offs of different projects.
2. **Use a framework that is flexible to circumstances.** Because what Social Value 'looks like' varies between contexts, measurement frameworks must be flexible and adaptable e.g. by having an open section where specific relevant measures can be added by stakeholders. A combination of qualitative, quantitative and financial measures will be appropriate in most cases.
3. **Involve stakeholders throughout the process, from planning, implementation to evaluation.** Value is subjective, relational, contingent and contested. It varies between contexts, and even within contexts. This means that all relevant stakeholders must have meaningful participation in all stages of the process, so that what is most valuable to them can be understood.
4. **Allocate sufficient resources for Social Value analysis.** A key barrier to Social Value analysis is the resource intensity of the process. Funders should provide adequate additional funding to cover the staff and resource costs of measuring and reporting Social Value. This would help to ensure that funds allocated to *delivering* Social Value are not diverted into measurement and reporting.

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Images used in this report originate from a variety of sources which are acknowledged below:

- Figure 1. Image from EDF Energy Third Light Media Library
- Figure 2. Image adapted from https://www.hpcfunds.co.uk/
- Figure 3. Image from BBC News https://www.bbc.co.uk/news/business-36897180
- Figure 4. Researcher's own
- Figure 5. Image adapted from the Social Value Portal http://socialvalueportal.com/kpi-library/
- Figure 6. Researcher's own
- Figure 7. Image shared with researcher by the health and well-being initiative grant recipient
- Figure 8. Researcher's own

8. References

Aitken, M., 2010. Why we still don't understand the social aspects of wind power: A critique of key assumptions within the literature. *Energy Policy*, 38(4), pp.1834-1841. http://dx.doi.org/10.1016/j.enpol.2009.11.060

Barrett, J., Owen, A. and Taylor, P. (2018) Funding a low carbon energy system: A fairer approach? UKERC Policy Briefing. Available at: http://www.ukerc.ac.uk/publications/funding-a-low-carbon-energy-system.html

Blewitt, J. 2008. *Understanding Sustainable Development*. London and Sterling, VA: Earthscan.

Bridge, G., Bouzarovski, S., Bradshaw, M. and Eyre, N., 2013. Geographies of energy transition: Space, place and the low-carbon economy. *Energy Policy*, 53, pp.331-340. https://doi.org/10.1016/j.enpol.2012.10.066

Bridge, G., Barr, S., Bouzarovski, S., Bradshaw, M., Brown, E., Bulkeley, H. and Walker, G., 2018. *Energy and Society: A Critical Perspective*. London and New York: Routledge.

Brook, B.W. and Bradshaw, C.J.A., 2015. Key role for nuclear energy in global biodiversity conservation. *Conservation Biology*, 29(3), pp.702-712. http://doi.wiley.com/10.1111/cobi.12433

Brown, T. C., 1984. The concept of value in resource allocation. *Land Economics*, 60, pp.231-246. http://dx.doi.org/10.2307/3146184

Bullard, Robert D., 1983. Solid Waste Sites and the Black Houston Community. *Sociological Inquiry*, 53(2-3), pp.273-288. https://doi.org/10.1111/j.1475-682X.1983.tb00037.x

Burgess, G., Monk, S. and Whitehead, C., 2011. Delivering local infrastructure and affordable housing through the planning system: the future of planning obligations through Section 106. *People, Place and Policy*, 5(1), pp.1-11. https://doi.org/10.3351/ppp.0005.0001.0001

Chan, K.M.A., Balvanera, P., Benessaiah, K., Chapman, M., Díaz, S., Gómez-Baggethun, E., Gould, R., Hannahs, N., Jax, K., Klain, S., Luck, G.W., Martín-Lómez, B., Muraca, B., Norton, B., Ott, K., Pascual, U., Satterfield, T., Tadaki, M., Taggart, J. and Turner, N., 2016. Why protect nature? Rethinking values and the environment. *Proceedings of the National Academy of Sciences*, 113(6), pp.1462-1465. https://doi.org/10.1073/pnas.1525002113

Chan, K.M.A., Gould, R.K. and Pascual, U., 2018. Relational values: what are they, and what's the fuss about? *Current Opinion in Environmental Sustainability*, 35, pp.1-7. https://doi.org/10.1016/j.cosust.2018.11.003

Cohen, B., 1976. Impacts of the Nuclear Energy Industry on Human Health and Safety. *American Scientist*, 64(5), pp.550-559. https://www.jstor.org/stable/27847467

Corner, A., Venables, D., Spence, A., Poortinga, W., Demski, C. and Pidgeon, N., 2011. Nuclear power, climate change and energy security: Exploring British public attitudes. *Energy Policy*, 39(9), pp.4823-4833. http://dx.doi.org/10.1016/j.enpol.2011.06.037

DECC (UK Department of Energy and Climate Change), 2011. *National Policy Statement for Nuclear Power Generation (EN-6). Volume I of II.* [pdf] Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/47859/2009-nps-for-nuclear-volumeI.pdf

Delina, L.L. and Sovacool, B.K., 2018. Of temporality and plurality: an epistemic and governance agenda for accelerating just transitions for energy access and sustainable development. *Current Opinion in Environmental Sustainability*, 34, pp.1-6. https://doi.org/10.1016/j.cosust.2018.05.016

Dewar, D., Harvey, L. and Vakil, C., 2013. Uranium mining and health. *Canadian Family Physician*, 59(5), pp.469-71. http://www.ncbi.nlm.nih.gov/pubmed/23673579

Ewings, P.D., Bowie, C., Phillips, M.J. and Johnson, S.A., 1989. Incidence of leukaemia in young people in the vicinity of Hinkley Point nuclear power station, 1959-86. *BMJ*, 299(6694), pp.289-93. http://www.ncbi.nlm.nih.gov/pubmed/2504406

Foulds, C., Fox, E., Robison, R. and Balint, L., 2017. Editorial - four social sciences and humanities cross-cutting theme reports. Cambridge: SHAPE ENERGY. Available at: https://shapeenergy.eu/wp-content/uploads/2017/06/SHAPE-ENERGY_ThemeReports_EDITORIAL.pdf

Gehman, J., Lefsrud, L.M. and Fast, S., 2017. Social license to operate: Legitimacy by another name? *Canadian Public Administration*, 60(2), pp.293-317. http://doi.wiley.com/10.1111/capa.12218

Glasson, J., Wee, D.V.D. and Barrett, B., 1988. A local income and employment multiplier analysis of a proposed nuclear power station development at Hinkley Point in Somerset. *Urban Studies*, 25(3), pp.248-261. https://www.jstor.org/stable/43192282

Glasson, J., 2012. Better monitoring for better impact management: the local socio-economic impacts of constructing Sizewell B nuclear power station. *Impact Assessment and Project Appraisal*, 23(3), pp.215-226. https://doi.org/10.3152/147154605781765535

Goodland, R., 2002. Sustainability: Human, Social, Economic and Environmental. *Encyclopedia of Global Environmental Change*, 6(11), pp.220-225.

Haggerty, J.H., Kroepsch, A.C., Walsh, K.B., Smith, K.K. and Bowen, D.W., 2018. Geographies of Impact and the Impacts of Geography: Unconventional Oil and Gas in the American West. *Extractive Industries and Society*, 5(4), pp.619-633. https://doi.org/10.1016/j.exis.2018.07.002

Harris, J., Hassal, M., Muriuki, G., Warnaar-Notschaele, C., McFarland, E. and Ashworth, P., 2018. The demographics of nuclear power: Comparing nuclear experts' scientists' and non-science professionals' views of risks, benefits and values. *Energy Research and Social Science*, 46, pp.29-39. https://doi.org/10.1016/j.erss.2018.05.035

Heffron, R.J. and McCauley, D., 2017. The concept of energy justice across the disciplines. *Energy Policy*, 105, pp.658-667. https://doi.org/10.1016/j.enpol.2017.03.018

Herbert Smith LLP, 2012. *Deed of Development Consent Obligations pursuant to section 106 of the Town and Country Planning Act 1990 relating to Hinkley Point C, Somerset*. Available at: https://www.sedgemoor.gov.uk/media/1725/DCO-S106-Agreement/.../S106_Agreement

Holland, R.A., Scott, K., Hinton, E.D., Austen, M.C., Barrett, J., Beaumont, N., Blaber-Wegg, T., Brown, G., Carter-Silk, E., Cazenave, P., Eigenbrod, F., Hiscock, K., Hooper, T., Lovett, A., Papathanasopoulou, E., Smith, P., Thomas, A., Tickner, R., Torres, R. and Taylor, G., 2016. Bridging the gap between energy and the environment. *Energy Policy*, 92, pp.181-189. https://doi.org/10.1016/j.enpol.2016.01.037

Jenkins, K., McCauley, D. and Warren, C.R., 2017. Attributing responsibility for energy justice: A case study of the Hinkley Point Nuclear Complex. *Energy Policy*, 108, pp.836-843. https://doi.org/10.1016/j.enpol.2017.05.049

Kopytko, N. and Perkins, J., 2011. Climate change, nuclear power, and the adaptation–mitigation dilemma. *Energy Policy*, 39(1), pp.318-333. https://doi.org/10.1016/j.enpol.2010.09.046

Krauss, S.E., 2005. Research Paradigms and Meaning Making: A Primer. *The Qualitative Report*, 10(4), pp.758-770. http://nsuworks.nova.edu/tqr/vol10/iss4/7

Local Government Association, 2019. S106 obligations overview [online]. Available at: https://www.local.gov.uk/pas/pas-topics/infrastructure/s106-obligations-overview

McGuire, A., 1983. The Regional Income and Employment Impacts of Nuclear Power Stations. *Scottish Journal of Political Economy*, 30(3), pp.264-274. http://doi.wiley.com/10.1111/j.1467-9485.1983.tb01018.x

Minchiello, V., Aroni, R., Timewell, E. and Alexander, L., 1992. *In-Depth Interviewing: Researching People*. London: Routledge.

Nguyen, V.P. and Yim, M.S., 2018. Examination of different socioeconomic factors that contribute to the public acceptance of nuclear energy. *Nuclear Engineering and Technology*, 50(5), pp.767-772. https://doi.org/10.1016/j.net.2018.02.005

Parkhill, K.A., Butler, C. and Pidgeon, N.F., 2014. Landscapes of Threat? Exploring Discourses of Stigma around Large Energy Developments. *Landscape Research*, 39(5), pp.566-582. http://dx.doi.org/10.1080/01426397.2013.775232

Rashad, S. and Hammad, F., 2000. Nuclear power and the environment: comparative assessment of environmental and health impacts of electricity-generating systems. *Applied Energy*, 65(1–4), pp.211-229. https://doi.org/10.1016/S0306-2619(99)00069-0

Robison, R. and Foulds, C., 2017. The SHAPE ENERGY academic workshop - current landscapes and future directions for European energy research. Cambridge: SHAPE ENERGY. Available at: https://shapeenergy.eu/wp-content/uploads/2017/08/SHAPE_ENERGY_Academic_Workshop.pdf

Roddis, P., Carver, S., Dallimer, M. and Ziv, G., 2018. The role of community acceptance in planning outcomes for onshore wind and solar farms: An energy justice analysis. *Applied Energy*, 226, pp.353-364. https://doi.org/10.1016/j.apenergy.2018.05.087

Schwartz, S.H., 2012. An Overview of the Schwartz Theory of Basic Values. *Online Readings in Psychology and Culture*, 2(1), pp.1-20. https://doi.org/10.9707/2307-0919.1116

Smyth, H., Lecoeuvre, L. and Vaesken, P., 2018. Co-creation of value and the project context: Towards application on the case of Hinkley Point C Nuclear Power Station. *International Journal of Project Management*, 36(1), pp.170-183. https://doi.org/10.1016/j.ijproman.2017.04.013

Social Enterprise UK, 2019. Working with the private sector. Available at: https://www.socialenterprise.org.uk/our-work-with-the-private-sector

UCL, 2017. *Evidence, Publics and Decision-making for Major Renewable Energy Infrastructure. [pdf] Available at*: https://www.ucl.ac.uk/nsips/pdfs/Final_Findings_Recommendations

UK Parliament, 2012. *Public Services (Social Value) Act* 2012, Available at: https://www.legislation.gov.uk/ukpga/2012/3/pdfs/ukpga_20120003_en.pdf

Wood, C., and Leighton, D., 2010. *Measuring social value: the gap between policy and practice*. [pdf] Demos. Available at: https://www.demos.co.uk/files/Measuring_social_value_-_web.pdf

Wüstenhagen, R., Wolsink, M. and Bürer, M.J., 2007. Social acceptance of renewable energy innovation: An introduction to the concept. *Energy Policy*, 35(5), pp.2683-2691. https://doi.org/10.1016/j.enpol.2006.12.001

9. Appendix I: Annotated bibliography of useful resources

9.1. Social Value resources

Social Value Portal website [link here]

The Social Value Portal is an organisation dedicated to mainstreaming Social Value into business practice and promoting the uptake of the Public Services (Social Value) Act 2012. Their website is a rich resource for understanding the legislative background to Social Value (see here), case studies of how a Social Value approach has been applied in practice (see here), and keeping up to date with news (see here). They have also developed the National TOMS (Themes, Outcomes, Measures) Framework which is free to download and aims to provide a minimum reporting standard for Social Value. They are currently developing sector specific plug-ins, including one for civil works and big infrastructure.

Social Value UK website [link here]

Formerly the SROI Network, Social Value UK are the national professional network for social impact and Social Value, and a member of the global network Social Value International. It works with its member organisations to embed core principles of Social Value, to refine and share practice, and to influence policy. The website has helpful explainers, a database of reports e.g. comparing SROI to other Social Value measurement (see here), guidance on how to implement SROI, and a directory of tools to apply each of their SROI core principles. It also offers a free SROI self-assessment tool.

Social Value Hub website [link here]

This highly informative website is operated by Social Enterprise UK, the body for UK businesses which serve a social or environmental mission. It includes information about the Public Services (Social Value) Act 2012, a myth-buster on Social Value, case studies, and a range of other reports and resources.

Cabinet Office Guidance – Social Value Act: information and resources [link here]

This UK Government webpage contains key information on the Public Services (Social Value) Act 2012 and how implementation of the Act has been reviewed. It also provides some useful case studies of how the Act has been applied. The UK Department for Digital, Culture, Media and Sport has also produced a PDF Introductory Guide to the Act for policymakers and commissioners, see here.

Demos report – Measuring social value: the gap between policy and practice [link here]

This detailed report written by the think-tank Demos examines the theory of measuring social value and the history of the Social Value agenda in the UK. It also contains chapters on the practice of measuring Social Value in the UK, although it was written in 2010 (prior to Social Value Act 2012).

NEF Consulting – Prove and Improve Tools [link here]

The think-tank New Economics Foundation (NEF) has been very influential in the measurement of Social Value, and particularly developing the implementation of SROI practices. The website of their commercial arm, NEF Consulting, contains lots of useful information on different approaches to measuring Social Value and many reports which explain the underlying logic to different approaches. It also provides a tool decider chart which helps to identify different Social Value tools which may be appropriate under different conditions, such as the size of the organisation and the budget.

9.2. Hinkley Point C resources

UK Government webpage on Hinkley Point C nuclear power station [link here]

This webpage contains background to the Hinkley Point C project and the UK's government's involvement, contractual documents, and other reports such as the Value for Money Assessment. It also has information on the HPC Wider Benefits Realisation Plan which sets out the socioeconomic benefits of the project over its construction period.

EDF Energy report – Hinkley Point C: Realising the Socio-economic benefits [link here]

This report provides extensive information on the EDF Energy's strategy for delivering socio-economic benefits through the Hinkley Point C project, and the context for delivery of these benefits including timelines of what has

been implemented so far. It covers three key themes: People, Education, Skills and Employment; Economic Benefit and Supply Chain; and Community Investment. It provides multiple case studies for each of these themes showing how various benefits have been delivered.

Planning Inspectorate webpages for Hinkley Point C [link here]

The Planning Inspectorate for England and Wales, the government agency responsible for examining Nationally Significant Infrastructure Project (NSIP) applications, has a website which contains useful information on the NSIP planning process and documentation on NSIP planning applications. The webpage for Hinkley Point C contains links to planning documents such as the project's Development Consent Order and public consultation responses. The Section 106 document can be accessed here.

9.3. Academic resources

UCL NSIPs Project website [link here]

This interdisciplinary project based at University College London (UCL) examines public participation in decision-making processes around Nationally Significant Infrastructure Projects (NSIPs) for low carbon energy. It produced several academic papers (see here and here), and a summary report with key findings and policy recommendations (see here). The research was carried out from 2015 to 2017, and was led by Professor Yvonne Rydin who is a leading academic on planning and public policy.

SHAPE ENERGY Project website [link here]

The EU Horizon 2020 SHAPE ENERGY project (*Social Sciences and Humanities for Advancing Policy in European Energy*) developed capacity and expertise in using SSH to inform energy policy. It produced numerous publications, blogs and other resources as well as co-ordinating events and activities. It ran from 2017 to 2019, and was led by Dr Chris Foulds and Dr Rosie Robison of Anglia Ruskin University.

UK Energy Research Centre's ADVENT Project website [link here]

The ADVENT project (*Addressing Valuation of Energy and Nature Together*) is a major interdisciplinary project collaborated on by seven UK universities, led by Professor Andrew Lovett at University of East Anglia. It investigates the implications for natural capital and ecosystem services of different pathways for decarbonising the UK's energy system, thereby shining light on the benefits that people gain from nature and how these are affected by energy decisions. The project began in 2015 and ends in 2020.

10. Appendix II: Using the National TOMS Framework for the HPC community fund

A key recommendation of this report is to build consensus on which Social Value tool should be used in different contexts. Other key recommendations are to engage stakeholders throughout the process, to use a framework that is flexible to circumstances, and to allocate sufficient resources to cover Social Value analysis. The National TOMS Framework, developed by The Social Value Portal, is a good example of a tool which can achieve these aims. It is open source, meaning that it is free for anyone to use, and is relatively straightforward to apply meaning that it is not particularly resource intensive (though still requires some organisational capacity/expertise). However, in its standard form, it is not well suited for use in the VCSO sector (Voluntary and Community Sector Organisations). This appendix outlines the National TOMS Framework, presents an adapted version of the framework that can be used by the VCSO sector such as those which are eligible to receive grants from the HPC community fund, and provides recommended guidelines for how it can be applied in the context of HPC.

10.1. The National TOMS Framework

Developed by The Social Value Portal, a social enterprise specialising in Social Value measurement solutions, the National TOMS (Themes, Outcomes, Measures) Framework is a tool which aims to provide a minimum reporting standard for Social Value for public sector organisations and businesses. It was originally designed for Local Authorities but has since been expanded to enable its use in other types of organisation, and also has some 'plug-ins' for specific sectors e.g. real estate. A unique characteristic of the National TOMS Framework is that it assigns financial proxies so that the value of a project, policy, organisation or initiative can be expressed in financial terms. It provides financial proxies for 35 general measures designed to capture Social Value, but other measures can also be added by users to reflect local circumstances. It can be used for four principal activities: measurement and valuation; procurement and bid management; bid submissions; and contract management.

The National TOMS Framework was developed as a direct response to Lord David Young's 2015 Review of the Public Services (Social Value) Act 2012, which can be viewed here. This review called for a consistent measurement standard to support the implementation of the legislation. Specifically, the Social Value Portal established the Social Value Taskforce, sponsored by Chris White – the former MP who originally tabled the legislation as a Private Member's Bill. The Taskforce also had input from the UK Cabinet Office, the UK Department for Culture, Media and Sport, the Local Government Association, and many Local Authorities. The Taskforce launched the National TOMS Framework at the inaugural National Social Value Conference in 2017, and updated proxy values and guidance were published at the National Social Value Conference in 2018. The tool is intended to be 'live' and to evolve to reflect changing needs, so will be updated by The Social Value Portal on an annual basis.

10.2. Adapting the National TOMS Framework for the VCSO sector

The National TOMS Framework is based around five themes, 18 outcomes and 35 measures. Themes are overarching issues; outcomes are objectives that support the theme; measures are used to assess whether outcomes are achieved. Because these have been designed with Local Authorities in mind, they do not necessarily translate to VCSOs who wish to measure Social Value, which tend to be smaller and sometimes rely on volunteers meaning they have lower organisational capacity, such as those seeking to measure the Social Value created by a grant received from the HPC community fund. As discussed in this report, this funding is intended to go towards 'schemes, measures and projects which promote the economic, social or environmental well-being of [communities in Somerset] and enhance their quality

of life' (Herbert Smith LLP 2012). Thus, by its nature the HPC community fund is intending to create Social Value, meaning that appropriate measurement tools are particularly important.

Alongside this report, an output of the academic secondment to EDF Energy (coordinated by the Energy-PIECES project) was to adapt the National TOMS Framework for this purpose. This was done by using the three themes identified in the HPC Section 106 agreement (quoted above) as the basis for the framework i.e. economic, social, and environmental. A fourth section was also added, named 'other', to enable context-specific outcomes and measures to be added by users (in the National TOMS Framework this section is described as 'innovation'). Outcomes were then identified spanning the three themes, resulting in nine outcomes in total; measures were then identified for each of these outcomes, resulting in 12 measures (with spaces for more outcomes and measures to be added in the 'other' section). These were refined in consultation with key stakeholders. Financial proxies for each of the 12 measures were taken from the National TOMS Framework. See Figure 8 for a visualisation of the adapted framework i.e. 'the Hinkley Point C community fund Social Value Calculator'.

10.3. Using the Hinkley Point C community fund Social Value Calculator

The Hinkley Point C community fund Social Value Calculator (see Figure 8) is designed to be used in the evaluation and reporting of projects funded by the HPC community fund (either the CIM or the CF tranche). It could be provided to grant recipients either at the time of being awarded the grant, or at key points when impacts are measured e.g. one year into the funding. Much of the data required to complete the Calculator is likely to be gathered through standard reporting procedures, meaning that completion is not expected to take substantially more resources than existing reporting requirements. However, some additional training and support should be provided by EDF Energy to ensure that grant recipients are fully equipped to complete this evaluation exercise. Additional funding to support completion of the Calculator may be required. The Calculator does not replace existing evaluation arrangements; it is envisaged to act alongside current processes to provide a financial expression of Social Value created. A financial expression of social value, *alongside other measures, is expected to have benefits for grant recipients in terms of* communicating the value of their projects, as well as for EDF Energy in terms of expressing the value that the HPC community fund has helped to create.

There is also potential for the Calculator to inform the allocation of HPC grant funding, though this is *not recommended* as a replacement for the current grant allocation process or the expert judgement of the Somerset Community Foundation grants panel (the body which administers the CF tranche of the funding). For example, the grants panel could consider the outcomes expected to be achieved by projects bidding for funding, and whether these align with the framework. More outcomes could be added to the framework if the panel or other stakeholders consider them to be important, potentially identified via the TOMS Needs and Priorities Survey (or a similar process which considers which outcomes are important in the context of HPC). The TOMS Needs and Priorities Survey is a consultation exercise designed to elicit priorities from the relevant stakeholders or reference community, including intended beneficiaries. It can be downloaded here, and follows four key principles:

- Be inclusive: ensure the sample of respondents is representative of all relevant stakeholders
- Be proportionate: scale up or down engagement efforts depending on circumstances
- Be clear: add in text as and where required to make it relevant to the specific context
- Be considerate: choose the most effective way to engage with different stakeholder groups

Social Value Calculator for the Hinkley Point C £20m community fund

Organisation:		Grant total:	£1	Social Value Investment Ratio
Name of project:		Social value total:	£0.00	£0 to 1

Adapted from The Social Value Portal's National TOMS (Themes, Outcomes, Measures) 2019 Social Value Calculator

Theme	Outcome	Ref	Measure	Unit	Value	Data Source for value	Social Value Proxy	Notes on Social Value Proxy	Social Value (£) generated by this grant	Additional Qualitative Information
1. Economic	More people in employment	1.1	No. of people (FTE) employed	No. people FTE			£28,758.00	UK value, taken from from TOMS (NT1)	£0.00	Additional qualitative information on the Social Value created by the grant to be recorded here
	Improved skills and employability	1.2	No. of volunteering opportunities provided	No. hours			£14.80	Value taken from TOMS (NT29)	£0.00	Additional qualitative information on the Social Value created by the grant to be recorded here
		1.3	No. of training opportunities provided	No. weeks			£246.39	Value taken from TOMS (NT9)	£0.00	Additional qualitative information on the Social Value created by the grant to be recorded here
		1.4	No. of hours dedicated to supporting people into work	No. hrs * No. attendees			£100.33	Value taken from TOMS (NT7 and NT11)	£0.00	Additional qualitative information on the Social Value created by the grant to be recorded here
2. Social	Stronger communities	2.1	Initiatives taken to build stronger community networks	£ invested (including staff time)			£1	Value taken from TOMS (NT27)	£0.00	Additional qualitative information on the Social Value created by the grant to be recorded here
	Healthier communities	2.2	Initiatives taken to engage people in health or wellbeing initiatives	£ invested (including staff time)			£1	Value taken from TOMS (NT26)	£0.00	Additional qualitative information on the Social Value created by the grant to be recorded here
		2.3	Initiatives taken to tackle homelessness	£ invested (including staff time)			£1	Value taken from TOMS (NT25)	£0.00	Additional qualitative information on the Social Value created by the grant to be recorded here
	Safer communities	2.4	Initiatives aimed at reducing crime	£ invested (including staff time)			£1	Value taken from TOMS (NT24)	£0.00	Additional qualitative information on the Social Value created by the grant to be recorded here
3. Environmental	Climate impacts are reduced	3.1	Savings in CO2 emissions	tonnes CO2e			£67.01	Value taken from TOMS (NT31)	£0.00	Additional qualitative information on the Social Value created by the grant to be recorded here
	Air pollution is reduced	3.2	Car miles saved	hundreds of miles saved			£1.61	Value taken from TOMS (NT32)	£0.00	Additional qualitative information on the Social Value created by the grant to be recorded here
	Green spaces are improved	3.3	Voluntary time dedicated to green spaces	No. hours			£14.80	Value taken from TOMS (NT34)	£0.00	Additional qualitative information on the Social Value created by the grant to be recorded here
	Environmental awareness is increased	3.4	Inititatives which increase environmental awareness	£ invested (including staff time)			£1	Measure added. Value taken from TOMS (NT24-27).	£0.00	Additional qualitative information on the Social Value created by the grant to be recorded here
4. Other	Other outcomes (TBD depending on circumstances)	4.1	Other measures e.g. inititiatives	£ invested (including staff time)			£1	Value taken from TOMS (NT36)	£0.00	Additional qualitative information on the Social Value created by the grant to be recorded here
		4.2	Other measures e.g. staff/expert hours	no. staff/expert hours			£85.57	Value taken from TOMS (NT37)	£0.00	Additional qualitative information on the Social Value created by the grant to be recorded here
		4.3	Other measures e.g. volunteer hours	no. staff volunteering hours			£14.80	Value taken from TOMS (NT38)	£0.00	Additional qualitative information on the Social Value created by the grant to be recorded here

Figure 8. *Social Value Calculator for the Hinkley Point C £20 million community fund, adapted from The Social Value Portal's National TOMS (Themes, Outcomes, Measures) Social Value Calculator*

Energy-PIECES

Exploring Social Value in the Context of Nationally Significant Infrastructure Projects: A Case Study of Hinkley Point C

April 2020