



“A FRAMEWORK FOR UNDERSTANDING AND DESIGNING BUSINESS MODELS FOR SUSTAINABLE DEVELOPMENT”

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The paper presents and applies a novel framework for incorporating ethical concerns for the natural environment and wellbeing into business design. In this sense we are directly confronting sustainable development. Within the context of business ethics, sustainable development can be seen as the application of ethical concerns for the natural environment and wellbeing to societal provisioning (‘meeting needs’). A novel framework proposed in this work synthesises 3 previous business model frameworks and builds in new categories and social, environmental and economic considerations to make it ‘fit’ for the purpose of investigating business models for sustainable development. The contribution made by the novel framework is through its new categories, incorporation of environmental and social considerations, and the ‘torch light articulation’ which aids communication of the concepts. The framework is applied to a case study of an energy provider, allowing a rich and powerful understanding of how the energy company’s business model works in practice and providing new insight of the interaction between different types of value: social, environmental and economic and how context shapes such value.

Key words: Business model; sustainability; servitization: sustainable business; sustainable development

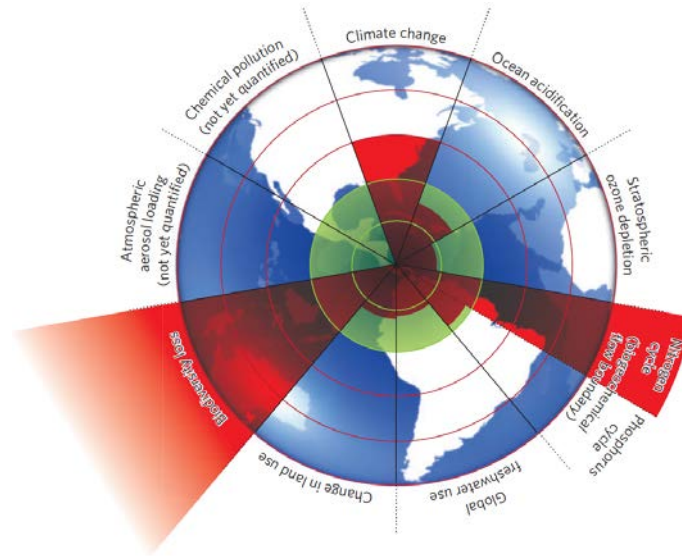
1. Introduction

The large scale of resource use to supply consumer goods and services is the main reason that society stands so close to breaching many boundaries set out for key global environmental pressures (Allwood et al 2011; Rockström et al 2009) as seen in Figure 1. A more intelligent approach to goods and services provision is required (Clift and Allwood 2011). Delivering more intelligent approaches requires a combination of new technologies, changes in practice/behaviours, in combination with improved business design (via change in business models). The objective of this paper is to develop and apply a framework that helps researchers and practitioners explore and understand business models in the context of sustainable development (SD).

2. Background

The research is important as environmental pressures such as climate change are one of the greatest threats to human prosperity. Climate change and other key global environmental pressures are shown as variables in Figure 1. The inner shaded circle (in green) represents the proposed safe operating space for ten planetary systems. The shaded wedges (in red) represent an estimate of the current position for each variable. For three of the ten key global environmental pressures (rate of biodiversity loss, climate change and interference with the nitrogen cycle) threshold values (for safe operating boundaries) have already been exceeded.

Figure 1: Beyond the boundary (Rockström et al 2009)



In response to the growing environmental crisis as well as social pressures, a literature around sustainable business models has developed. The realisation that business models can help deliver corporate sustainability has been explicitly recognised and progressed over the last seven to eight years primarily by a number of key authors (Tukker et al. 2006; Charter et al. 2008; Stubbs and Cocklin 2008; Wells 2008; Wells and Seitz 2005; Wüstenhagen and Boehnke 2008; Lüdeke-Freund 2013). For an overview of work to date, Boons and Lüdeke-Freund (2013) provide a systematic review of sustainability innovation and business models. Although there is recognition that business models can support corporate sustainability, Shaltegger et al. (2011) identify that in the broader discourse on business model innovation the literature almost entirely ignores sustainability issues. Two exceptions are provided, with Johnson and Suskewicz (2009) producing work in relation to eco-innovations and Yunis et al. (2010) in relation to social entrepreneurship. Additionally, Brocken et al. (2013) in their review, identify few tools if any that assist firms in the practical design of value propositions for business models for sustainability.

In the literature review for this project there are examples of a small number of frameworks and tools that are highly relevant for exploring and understanding business models for sustainable development. These studies were as follows: Shaltegger et al. (2011); Lüdeke-Freund (2013); Brocken et al. (2013); and Brocken et al. (2014). From review of these studies none of the frameworks examined were found to be helpful in understanding and exploring business models for sustainable development in detail.

The frameworks are generally aggregated (the first, second and fourth study) or not capable of providing a deep understanding of a company's business model (all four studies)¹. The biggest gaps however lie in the way that value is perceived and captured. None of the papers actually define value even though they all discuss the construct. Lüdeke-Freund (2013) and Shaltegger et al. (2011) discuss business cases, but do not recognise that the business case (value) might be different from the economic case (value) for a business model. None of the studies discuss or flesh out economy wide effects in relation to social and environmental aspects. The authors of this paper suggest that this represents a gap in the literature that requires research if one is to really understand the trade-offs between the different dimensions of value - economic, environmental and social - for sustainable development, and bring forth new designs that avoid these trade-offs. The gap might be present as none of the papers define sustainable development and instead use the language of sustainable business models, the latter terminology used in the literature has issues².

Having identified a gap in the literature with regards to business model frameworks that can guide practitioners in organisational design, the paper will proceed to set out a framework.

3. Moving towards a framework

3.1. Defining sustainable development

In the current paper we define sustainable development using the most widely used Brundtland Report definition (United Nations 1987):

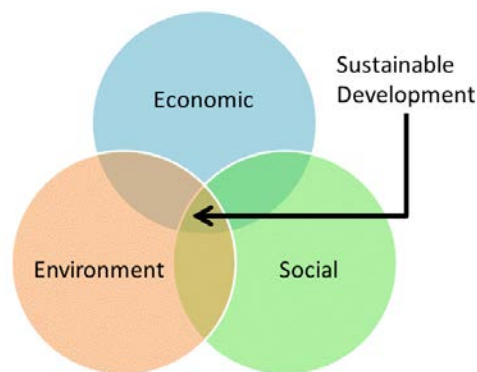
“development that meets the needs of the present without compromising the ability of future generations to meet their own needs”.

¹ For example, Brocken et al (2013) provide a novel approach with their value chain mapping by stakeholder, but do not provide any real framing of the business model, this is problematic as without fleshing out the business model properly, it is difficult to fully understand and to articulate value generated for stakeholders. Also none of the frameworks identify different social, environmental and economic metrics to assess value. Also, none of the frameworks pick up on the fact that value and dis-value is co-created in production and consumption and depends heavily on context.

² There is also a danger in using just the term sustainable as it can be converted to serve the means and ends of just one dimension/parameter of sustainable development alone, and this is not consistent with Sustainable Development which involves three key dimensions as set out by the UN in 1992.

There is a need to incorporate concerns around natural environment and wellbeing into societal provisioning ('meeting needs'). This is the reason why sustainable development encompasses environmental, social and economic dimensions (UN 1992), see Figure 2. Essentially the issue of challenge for society is to design systems of provision (including business models) that enable society to meet all three dimensions.

Figure 2: The three dimensions of sustainable development



The current authors advocate that what separates leading businesses for sustainable development from the laggards in terms of implementation is the extent to which they maximise **value** (value) to society and minimise dis-value. Value does not have to be seen in terms of purely monetary exchange value that a company generates. In this paper we see value as 'goodness' (Ng, 2012) and dis-value as damage to humans 'capabilities to flourish' (Sen 1999). The paper looked at potential indicators of direct but also economy wide measures of value/dis value for each of the dimensions in Figure 2, the work undertaken and approach developed for capturing is described in appendix 1.

3.2. Strengths and weaknesses of popular business model frameworks for SD

An enterprise either explicitly or implicitly employs a business model that describes the architecture of the value creation, delivery, and capture mechanisms it employs (Teece, 2010; Zott and Amit, 2010). The strengths and weaknesses of current frameworks have been described, applied in workshops with industry, and found wanting by practitioners and the authors as discussed in Bradley et al. (2015). In

this section we critique and combine three selected business model frameworks to provide a starting point built on literature for a novel framework fit for exploring and understanding business models for sustainable development. The three frameworks chosen based on review of the literature capture progressively greater levels of detail: Parry and Tasker (2014); Baden-Fuller and Haefliger (2013)/Baden-Fuller and Mangematin (2013) and Osterwalder and Pigneur (2010). A full review of the frameworks can be seen in Bradley et al. (2015), a summary of strengths and weaknesses of these popular frameworks for examining business models for sustainable development is now provided.

Table 5: Strengths of frameworks for examining business models for sustainable development

FRAMEWORK	STRENGTHS FOR EXAMINING BUSINESS MODELS FOR SUSTAINABLE DEVELOPMENT
Parry and Tasker (2014)	<i>Explicitly recognises that value is co-created in use.</i>
	<i>Capture of worth and value in broad terms.</i> This could be value to society, value to the environment or value to the economy. Such a wide conception of value is critical in recognising and understanding business models for sustainable development and the value or de-value that result when the business model is being explored.
	The model, because of its emphasis on co-creation of value (Vargo and Lusch, 2008), <i>allows a deep and rich conceptual understanding of value</i> and how it is co-created in use (when the value proposition is enacted with stakeholders).
	The frameworks focus on co-creation of value <i>captures the ‘creative spirit’ and emergent properties</i> of a business model that occurs when enacted with stakeholders to create value. This is a real strength.
The Baden-Fuller and Mangematin (2013)	The Baden-Fuller and Mangematin (2013) and Baden-Fuller and Haefliger (2013) business model typology is a <i>simple framework, relatively easy for businesses to understand and focuses on a small set of key characteristics of a business model</i> , namely customer sensing, customer engagement, monetisation, value chain and linkages.
	Using the typology <i>one can understand the characteristics and type of business models that is being explored and draw synergy or difference</i> between other business models. Such capabilities are of importance in really understanding a business model and how it is different from other models used in the sector or economy.
	From the author’s experience, the use of the framework <i>energises managers in workshops and adds creativity to the process</i> in identifying the business model.
Osterwalder and Pigneur (2010)	The canvas business model has its <i>main strength in its detail and taking the business through thinking about a wide range of aspects of the business</i> and the business model. This allows managers to understand and articulate their business model.
	The level of <i>detail also allows more clarity in identifying barriers to a current or future business model</i> , an important advantage when exploring business models for sustainable development as often there can be numerous barriers (see Ceshin 2013).

Table 6: Weaknesses of frameworks for examining business models for sustainable development

FRAMEWORK	WEAKNESSES FOR EXAMINING BUSINESS MODELS FOR SUSTAINABLE DEVELOPMENT
Parry and Tasker (2014)	The disadvantages of the three element approach are that it is very conceptual and when used in workshops it can be difficult for managers to engage with such high level constructs.
	Authors found managers needed most help with the concept of value in use as KPIs and data was often not collected by firms and so this was difficult for many to engage with.
	The framework lacks detail to help individuals think through different aspects of their business model and how they interlink.
The Baden-Fuller and Mangematin (2013)	The framework does not enable sufficient detailed examination for managers to understand their business model , it only helps in an attempt to understand four key characteristics. From experience working with businesses the value of the key aspects are not realised until the business model is dissected in a level more detail. This is also the case with businesses recognising their realisation in use, capture of worth and value-co-creation (Parry and Tasker, 2014). It is helpful for business to go through systematically and in detail on their various activities and interlinkages.
	The typology is academically weak , it does not examine worth capture and the different types of value that may exist. Value is focussed upon the monetary value captured, which may only be one part of a business models true value. There is no reference to different types of value: exchange value, social or environmental value etc. Developing more nuanced concepts of value is critical when exploring business models for sustainable development.
	The model also does not properly recognise the importance of the system of stakeholders . The focus is primarily on customers paying to access a value proposition delivered by a focal firm. Key stakeholders who may be required to enable a business model may be missed, but exist in a broader system, yet be critical to the functioning of the business model.
Osterwalder and Pigneur (2010)	The major weakness of the framework is the procedural nature and lack of recognition of realisation of use, value co-creation and capturing of worth .
	The canvas focuses more or less explicitly on monetised value e.g. revenue streams – and this will only allow a partial understanding of the true value of a business model for sustainable development.
	A further major weakness is its inability to recognise the range of stakeholders that may be involved and integral to enacting a business model and co-creating value and worth. In this way, it lacks the ability to provide a deep conceptual understanding .
	The canvas does not enable a full understanding of business model function and its emergent properties . In terms of its application to explore business models for sustainable development these are critical aspects.

4. The business models for sustainable development framework

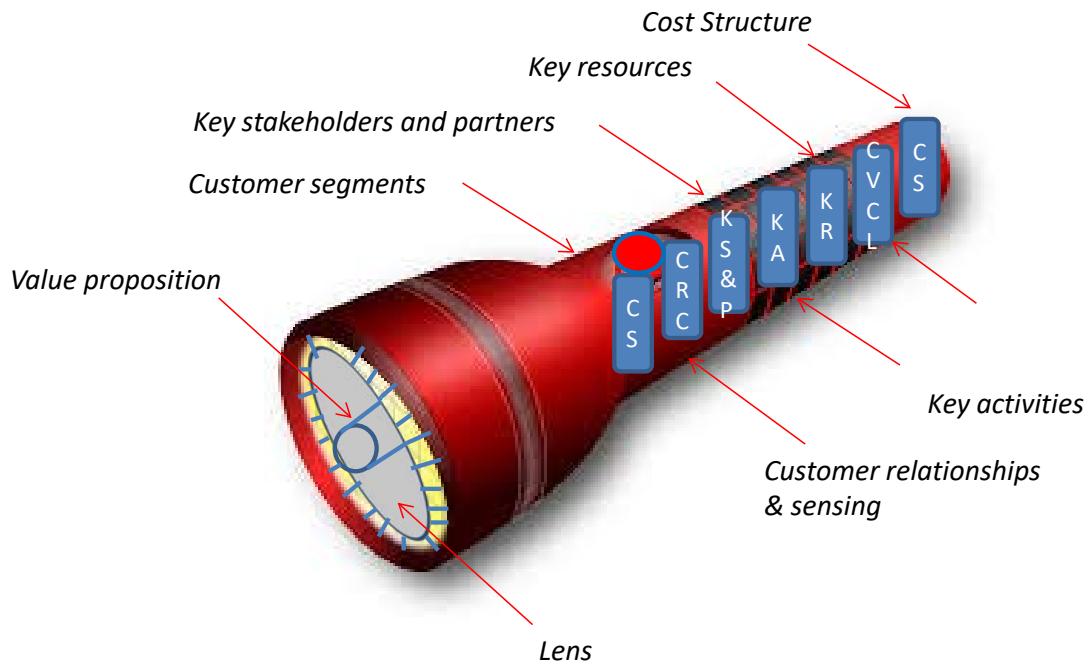
The new framework for business models for sustainable development builds upon Parry and Tasker (2014), Osterwalder and Pigneur (2010) and Baden-Fuller and Mangematin (2013) and Baden-Fuller and Haefliger (2013). The developed framework has its main strength in its new categories: direct and economy wide indicators of different types of value (social, environmental and economic); energised conceptualisation; communication and level of detail; taking the manager through thinking about a wide range of aspects of the business and the business model. The business model framework initiates the discussion and acts as a focal point of common interpretation and communication. As such, the framework acts as an epistemic object (Knorr, 2012) as it does not provide the information, but rather illustrates the challenge to be faced and acts to facilitate the process of knowing.

4.1. The framework presented as a ‘visual torch’

The new framework presented in Figure 9 has been organised by the current authors as a torch analogy. The torch analogy allows conceptualisation, communication and visualisation of how the business model comes together with consumers and the wider environment to co-create emergent value. A good picture and analogy can describe a ‘1000 words’ in seconds and lead to deep understanding by the organisation. The same framework is presented as a canvas in Appendix 2. Based upon experience presenting and working with the models we suggest that when engaging with businesses that the ‘visual torch’ analogy is used in presentation and then a replica canvas for businesses is given to participants to fill-in and go through.

There are eleven elements of the framework. The ‘torch’ components can be thought of as describing the ‘blueprint’ architecture (i.e. batteries wiring etc.) of the key parts of the business model that enable light (emergent value) to come forth from a value proposition. We now describe the various components that make up this ‘blueprint’ architecture.

Figure 3: The ‘torch’ framework (blue print architecture)



Understanding the ‘handle and lightbulb’

The first part of understanding the ‘blueprint’ architecture is to outline the value proposition. *Value proposition* is in all three of the prior frameworks. The value proposition describes the issue or challenge that an offer solves for the customer and describes the bundle of the products and services required to deliver upon the proposition (Parry and Tasker 2014; Osterwalder and Pigneur, 2010). In the typology by Baden Fuller and Mangematin (2013), value propositions capture the form of engagement, and describe if it is scale or bespoke. In Figure 3, the value proposition is seen as the front end of the torch, it is effectively the bulb from which light (value) can emerge when the value proposition is enacted with consumers.

Customer segments reflects the categorisation from Osterwalder and Pigneur (2010) and characterises the groups of consumers who utilise the value proposition. Managers are asked to consider if an offering focuses on a mass market or particular segments. Are there specific segments they recognise and target and if so what defines them? Do they target many segments or very few? Are they one or two sided markets – do they serve a single customer group with the same need or do their customers have different needs such as a newspaper having readers and advertisers?

Customer Relationships and Sensing draws upon customer relationships from Osterwalder and Pigneur (2010) which examines the relationships and the costs involved in those relationships. In the new model the description is extended to capture the first part of the typology by Baden Fuller and Mangematin (2013), customer sensing – and therefore when describing the relationships also explicitly asks: Are users paying? If not who are the other users? This links to the one or two sided market in customer segments, identifying who is paying for the product or service provided.

Key stakeholders and partners capture information about the network of suppliers and partners that make the business model work. Alliances are formed between organisations to optimise a business model, gain access to resource or lower risk³.

Key activities are the descriptors of what the firm does, such as ‘problem solving’ or ‘metal cutting’. Activities may be categorised into production, problem solving or platform maintenance. This category develops the work of Osterwalder and Pigneur (2010) by more closely considering use, resulting from the consumer engaging with the value proposition and realising value in use (Parry and Tasker 2014).

Key resources draw upon the category of Osterwalder and Pigneur (2010) and include resources of the value proposition of Parry and Tasker (2014). The category collects information about physical assets such as buildings and machinery, intellectual property such as brands, patents and copyright, human resources, particularly skilled workers and financial resources such as credit lines, equity or options. Due to our focus on business models for sustainable development, the category captures material inputs to production (this can be identified when looking at the variable input costs of the organisation), as this is the driver of key global environmental pressures.

³ A number of forms of partnership can be considered, drawing upon Cox (1996) we can identify a range of relationships. *Adversarial leverage* is the most common relationship for external contracting and happens when there is a choice between alternative suppliers and the supplier has no ownership or involvement in the production of the value proposition; *preferred suppliers* are the best at providing products or services which are of low strategic importance to the focal firm; *single sourcing* occurs when a provider is both the best provider and their provision of goods or services can impact upon the firm’s ability to deliver. The firm aims to reduce transaction costs with such a firm without partnering or buying them; *network sourcing and partnerships* occur when a supplier controls important assets; *strategic supplier alliances* are often referred to as joint ventures and happen when a supplier has a proprietary claim on the product or service with the provider.

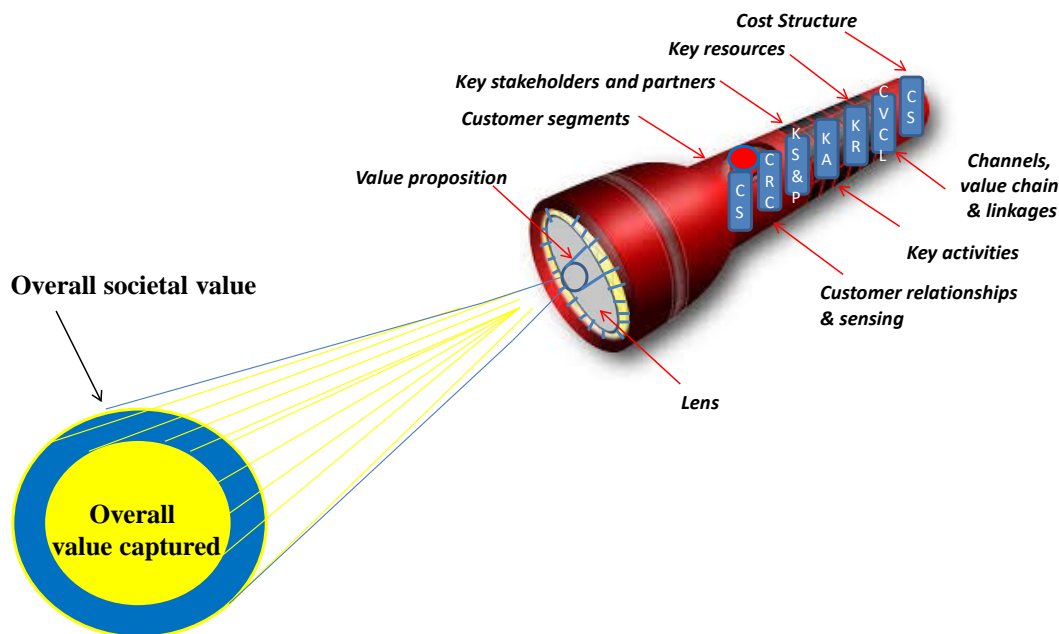
Channels, value chain and linkages; Distribution channels in Osterwalder and Pigneur (2010) has been revised to Channels, value chain and linkages. This then prompts attention not just on distribution of the product or service, but on the channels of engagement with a whole range of stakeholders that occurs when the business model is enacted for value co-creation. It also allows the opportunity to use the Baden Fuller and Mangematin (2013) typology to categorise firms as integrated, hierarchical or networked and the Parry and Tasker (2014) framework to recognise where stakeholders are involved in channels, value chain and linkages to enact a value proposition. Organisations may wish to extend their key resource embodied in their business model to include waste, water use, and emissions occurring offsite in the channels of their supply chain. This can give a deeper understanding of the true sustainability of their business model. Leading businesses might also seek to understand the impacts their suppliers are having on natural capital and social indicators and may ask suppliers for such information, to understand how they might re-organise their business model to reduce these impacts and the societal dis-value.

Cost Structure mirrors Osterwalder and Pigneur (2010) and asks managers to identify the main costs of operating their business. It is important to identify fixed costs that the firms are exposed to regardless of operations and their variable costs proportionate to their activity. Other questions relate to how organisations minimise costs and what economies of scale (volume lowers costs) or scope (breadth of offer lowers cost) might exist. Forward thinking organisations will also assess potential costs to their businesses from being engaged with suppliers that are not contributing to sustainable development and have an adverse effect on the environment or society. Changing your suppliers or business model to avoid these risks may be particularly important to an organisations sustainable development in some contexts.

4.2. How light (value) emerges

In order for value to be generated, the value proposition needs to be enacted⁴ with consumers. In our lightbulb analogy, this is effectively switching the torch to on in Figure 4.

Figure 4: The ‘torch light’ framework



Once the torch is turned on (the value proposition is enacted) light (value) will emerge through the lens of the torch which determines how the light (value from the enacted value proposition) emerges and the proportion of the value that can be captured by the business. In our analogy the lens is effectively the ‘worth capture’ mechanism and ‘customers /stakeholders use of the value proposition in their context’. ‘Worth Capture’ is from Parry and Tasker (2014) and incorporates the revenue category in Osterwalder and Pigneur (2010) and monetisation as described in Baden Fuller and Mangematin (2013). When seeking to understand the worth capture mechanisms one should ask about revenue

⁴ Enactment is effectively the ‘button’ that turns on the torch and allows the potential store of energy in the handle (the value proposition) to be transformed into light (value).

streams, but also exactly when, what and how money is raised? How does the organisation raise money and what are their financing options? The enacted value proposition and the 'lens' result in value captured by the organisation, e.g. money (exchange value). Capture of worth does not necessarily have to be money (Lepak et al., 2007), it can manifest in many ways such as social capital, twitter followers, Facebook likes etc. It is important to capture all aspects of worth that may be sought as many organisations seek to create and capture non-monetary value (represented by the multiple shades of light). Therefore when investigating worth capture the category also asks what other forms of non-financial value does the organisation seek to create and how do they evidence that impact.

The overall value captured, is shaped by the extent of dis-value (effectively reducing overall value and light produced) that the enacted value proposition and business model generates. In some cases this could render the business model to have no overall value to society. A proposition may well de-value existing social capital. This dis-value might be in the form of environmental impacts (pollution, resource use, ecosystem damage resulting from production and consumption) etc, or it could be in the form of social impacts (negative impacts on health and wellbeing resulting from production or consumption). In the case of a fast food chain producing high calorie/sugar/fat intensive meals such as perhaps a fast food burger bar, this can result in health impacts and also environmental impacts. It may create negative results on public indebtedness if government have to 'pick up the bill' for dealing with both health and environmental impacts that result from the enacted value proposition and business model. Governments and organisations can explore this by looking at the value and disvalue associated with various societal direct and economy wide environmental and social indicators listed in the appendix 1. Ideally, these indicators should be looked at in order to get a better picture of the enacted business model's economy wide sustainable development contribution/impact (and not just the functioning of the business model as described by most of the rest of this section). In practice it is most likely that only businesses that are willing to undertake such an analysis and garner detailed information will be able to undertake this more in depth analysis using indicators provided. It is difficult for third parties to complete this.

Customers/stakeholders use of value proposition in their context builds upon Parry and Tasker (2014) and is a new category. Its importance is in engaging with the realisation of value that only occurs in use; in this conceptual of understanding of value, context matters (Vargo and Lusch, 2008; O’Cass and Ngo, 2011; Ng et al 2013). The value of an offer in one context may be much higher, than in another, for example ice-cream sales are weather dependent. The category is integral to exploring business models for sustainable development, when impacts of consumption and production, and value are often linked to location and context. The category is particularly important when examining non-monetised value. Questions to be asked include: What are the different contexts in which the customer uses your offer? How does context effect the value proposition? Do key resources change with context? Given different contexts, how does the value of the proposition change from the customer’s perspective? What are the social and environmental impacts that occur in society during consumption/use of your products and services? Where is your production conducted? - in environmentally sensitive areas, or areas where there are water conflicts? This aspect is particularly important when assessing potential de-value to society from an organisations water use, or from emissions to sensitive environments and ecosystems. The question to then ask is how can changes in your business model reduce or entirely avoid the need for such activities?

The framework has now been presented and explained. In the next section we summarise results from applying the main framework to a case study energy company.

5. The methodological approach used in applying the case study

5.1. Theoretical underpinnings; the processual perspective

The processual perspective of strategy (Whittington, 2002) development in organisations encompasses both deliberate and emergent approaches (Mintzberg and Waters, 1985). This perspective sees business model development through a pragmatic process of learning, adaptation and compromise influenced by social, cultural and political factors. Using this lens, the research looks at the development of business models in organisations where formal strategic planning is well established. It looks behind the apparent rationality, evidenced by the development and publication of strategic plans, to identify

formal and informal strategy development processes at work. It then considers how these processes influence organisations willingness and ability to undertake activities necessary for the development of new and innovative business models.

Processual strategy emerges through a pragmatic process of learning, adaptation and compromise influenced by social, cultural and political factors. The perspective returns to the belief that managers are able to influence their organisations, but highlights the social context within which the firm operates. From this perspective, the practices of strategy depend on the social system. Managers might not follow profit maximising approaches because they make little sense given other multiple objectives.

The view that strategy can be emergent has three implications. First, it opens up strategy- making to be part of the activity of practitioners at all levels of the organisation. Second, it highlights the actions of managers, allowing examination of the motivations and constraints around those actions, including psychological constrains such as bounded rationality (Simon, 1963). Third, it includes consideration of issues characterised by Pettigrew as “political/cultural considerations” (1985 p. 46). This leads to the idea of strategy developments, “...a matter of social learning, that is, managers and others in the organisation learning how to adapt to a changing environment” (Wooldridge et al., 2008 p. 1193).

5.2. Method

The purpose of the case study is to pilot the business models for sustainable development framework in practice and explore new thinking in relation to business models used in the design of energy service provision and the public sector organisations. The particular context of the research has not been previously studied and an interview approach is suitable for piloting the framework with the processual perspective. The processual perspective (Whittington, 2002) underlying this research acknowledges that strategy-making in any organisation is complex. Understanding it requires a focus on the actions of the individuals involved. These actions are influenced by the individual’s own abilities and limitations as well as the context in which they are within. Case studies can have a single focus or look at the results of multiple studies (Yin, 2009). Yin puts forward that multiple case studies can have advantages, as they allow the identification of patterns. Single case studies can be appropriate in certain

circumstances. These include where the case is important in testing theory, revelatory, extreme or unique. The current research is a single case study and fits Yin's rationale of being a unique case used for testing theory: namely the application of business models for sustainable development framework.

5.3. Detail of interviews

Interviews provided depth and exploration of the business model, and these were guided by the framework of this paper and its questions (laid out in Appendix 3). The questions and answers allowed us to work with the interviewees to populate the business model canvas (Appendix 2) with critical information required to understand their business model and apply the framework. Interviews were semi-structured, following the framework, however, interviews were designed to be adaptive and somewhat unstructured if important emergent information surrounding the business models emerges from the respondents. This allowed additional depth and the project to capture the essentially qualitative nature of the process (Kleining 1998). The second part of the interview was more semi-structured and focused. Two directors of the organisation, named James and Dan (pseudo names to protect identity) are the respondents for the case study.

5.4. The energy services company case study

ENER Group specialise in low carbon energy provision, consultancy and support services, affordable housing, sustainable house building and property development. The council own the group, the group was formed in order to aid the council to deliver its four key priorities: Decent and Affordable Housing; The Environment; Health and Well-being and Economic Development. ENER are a limited company, ENER energy is one of 13 companies of the ENER group. The energy company are the focus of the case study. ENER provide electricity, heating and cooling services.

Figure 5: Business model – front end

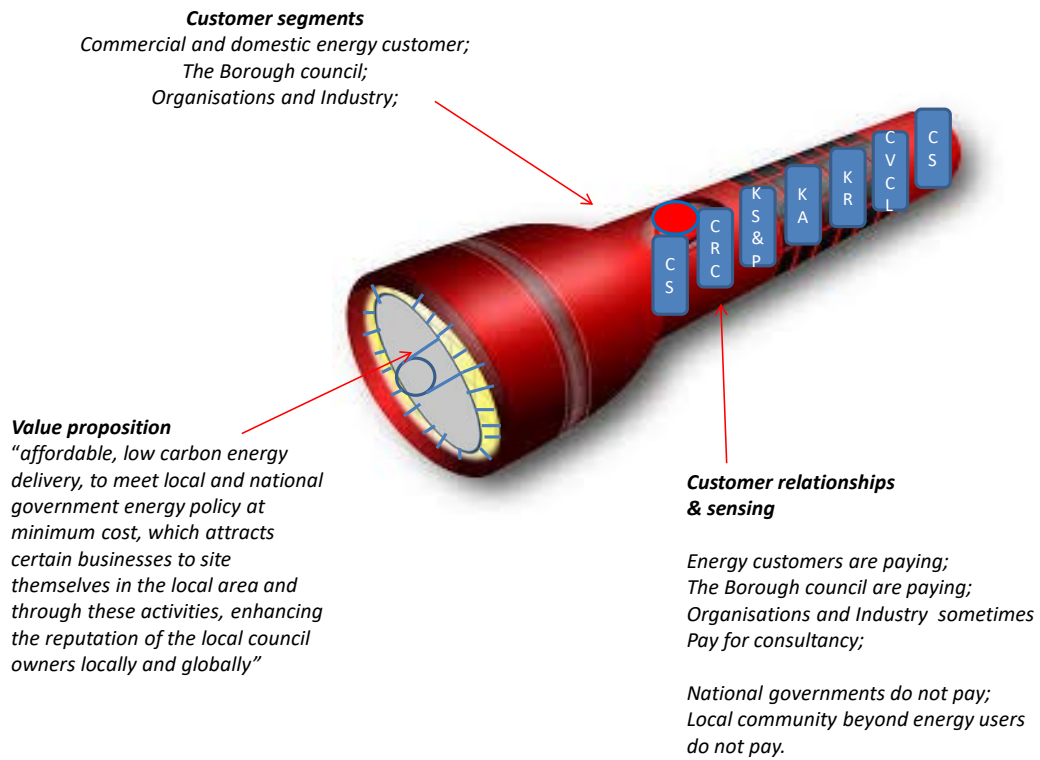
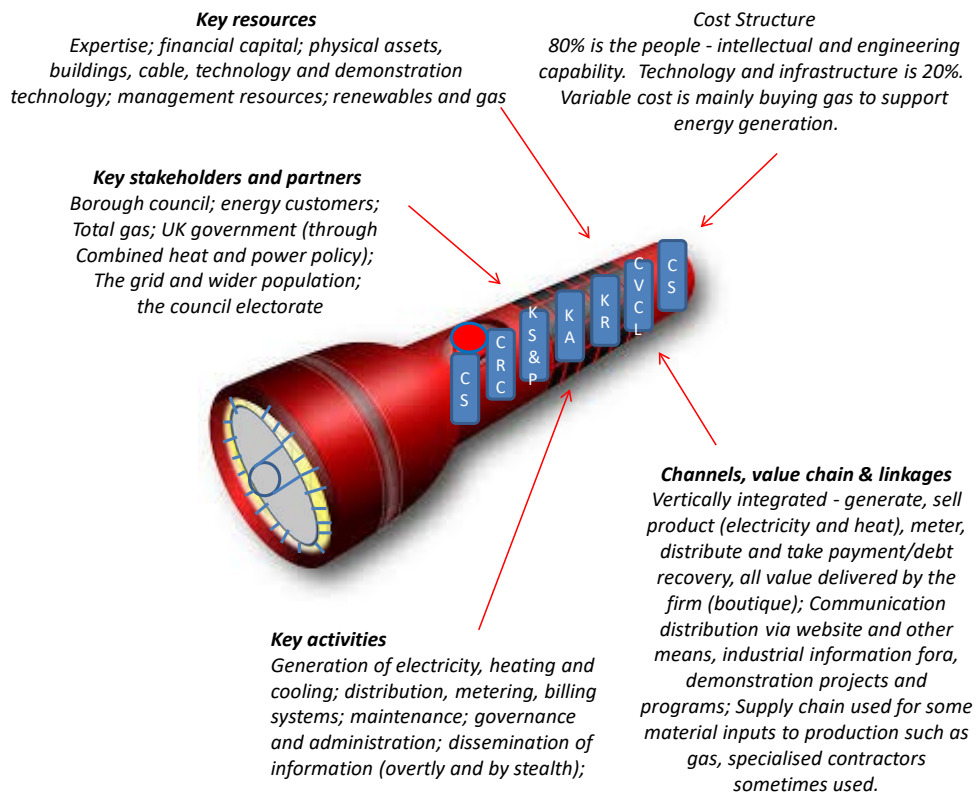


Figure 6:

Business model – back end



6. Business model summary

The main business model was summarised as follows by the respondent (James): “the Borough Council have a policy on energy, which is turned into a business proposition, financed by the Borough council, delivered by ENER Energy. The Outcome is benefit to consumers who buy energy and the Borough council (owners)”. The enacted value proposition for ENER Energy is described as follows: affordable, low carbon energy delivery (value to residential/commercial customers), to meet local and national government energy policy at minimum cost (value/worth for the council customers), which attracts certain businesses to site themselves in the local area (creating jobs and revenue for the council customer) and through these activities, enhancing the reputation of the local council owners locally and globally (value for council customers).

James identified that: “the true value of what we do is that if we enable politicians to be re-elected as they are seen to be doing the right thing, they will continue to fund their ownership of ENER. So there is a democratic value.”

He also stated: “why does the council want us to do it? It’s enabling the local community to benefit from lower carbon energy”⁵.

Value proposition

The customer engagement of the value proposition can be described as bespoke for the Borough council customers; but is a scale offer for domestic and industry energy customers. Consultancy services for organisations and industry can be described as bespoke and energy services supplied to the grid can be seen as bespoke. The challenge for the energy firm is to improve the reputation of the council with its stakeholders, boosting its perceived social value, whilst implementing policy and low carbon energy

⁵ James identified that exchange value from customers for energy makes a profit, though this is small. Value was also identified as being generated from the energy being clean (low carbon), this has value to some customers, but also in contributing to making the overall national grid less carbon intensive. Exchange value is also gained from a range of demand response services (e.g. selling energy back to the grid and reducing power use at certain times).

that is affordable, that when successfully brought together can attract business into the Borough council area.

Customer segments

Based on interview data, 2 main customer segments were identified. The main Customer segmentation is the dyad of commercial and domestic, and commercial is further divided into governmental, industrial and 'other', identified in Figure 5. ENER Energy places specific strategic focus on particular segments of the energy supply market, domestic and commercial energy customers that are geographically located in in the council borough, and often in social housing. However, the company's main customer is the Borough council itself which predominantly pay the company to conduct its activities.

ENER Energy's main customers (the Borough council and energy customers) are very different in terms of their needs and the services provided to them. The Borough council want to see implementation of environmental policy and promotion of related activities that enable policy and the resulting reputational and economic benefits the council will gain. Domestic energy customers' needs are primarily to have affordable and secure energy (some also appreciate low carbon energy). Commercial energy customers' needs are the same, but some of them also specifically want to gain the benefit from being part of a low carbon energy system of provision, which has policy implementation benefits and reputational benefits for ENER Energy. There is a strong link between the reputation needs of the council and the satisfaction and provisioning of the needs of energy customers.

Customer relationships and sensing

In the sense of customer relationships and sensing, both consumer and borough council customers pay ENER directly and relationships are personal. ENER has a CRM system which allows them to personally know customers in the case of energy customers, and this helps ensure reputation benefits that the Borough council sees.

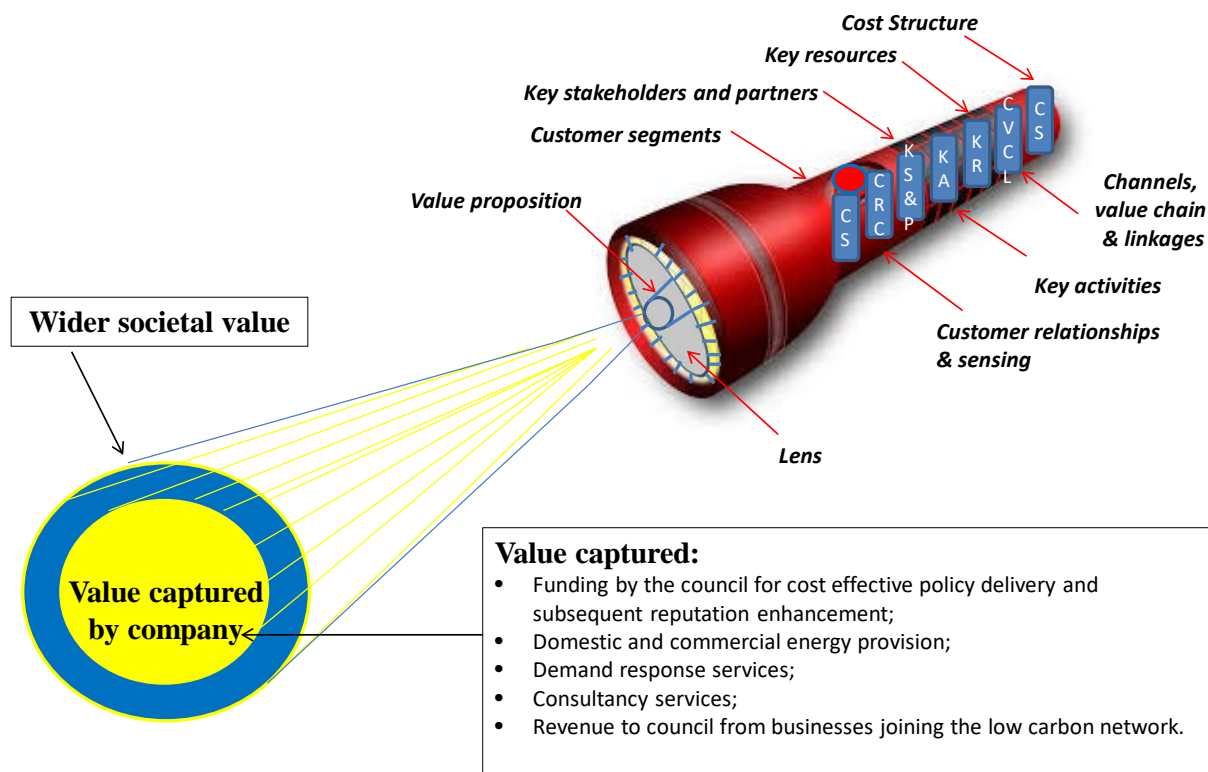
Key stakeholders and partners, Key activities, Key resources and Channels value chain and linkages

See as described in Figure 6.

Cost Structure

As described in Figure 6, the main fixed costs are salaries for staff of the company. Other fixed costs relate to energy engineering equipment for combined heat and power and other forms of decentralised generation, as well as distribution and transmission e.g. having a private wire. The main variable cost is the gas input to producing electricity and energy services.

Figure 7: Enactment of the value proposition with customers in a given context to create value



6.1. Explaining how context shapes value

The context that shapes value for main users (Borough council and energy consumers) relates to a number of factors: policy context; the need to deliver on policy and the link between this and

councillors being re-elected; the need for policy delivery to not impact council tax bills; peoples values and perceptions are impacted by policy delivery; and how the energy system works.

We first look at the policy context that ENER find themselves. There is a national legal context where the UK Climate Change Act 2008 has set a legally binding target for reducing GHG emissions by at least 80% by 2050, based on a 1990 baseline, and because of this GHG reduction has become an increasingly important goal in energy policy. Related to meeting this wider policy goal, ENER cited the combined heat and power policy as shaping their context and the value they create. James stated that “UK government has a combined heat and power policy that we form a small part of the delivery function of,”. The policy also shapes ‘the rules of the game’ for generation in that their energy production is predominantly from combined heat and power.

The local policy context was of particular importance, James stated: “The overriding benefit is that the Borough council can deliver on both statutory and non-statutory policies in a cost efficient manner” i.e. not impacting on the council tax requirement”. It was later clarified: “the principal policy context for this is the Council’s Climate Change Strategy which seeks to achieve both reductions in carbon emissions and improved energy independence” (Dan).

The scale of benefit is reflected in payment to ENER as James stated that the “main revenue is the Borough council”. With regards to energy, James stated “Energy consumers pay nothing more than they would with other national providers” and it was clear from the interview that little profit is made on energy sales. He further stated that the energy is cleaner.

It was explained by James that the strong environmental policy context (that ENER deliver for the Borough council) creates incentives for companies or businesses that want to be or want to be perceived as low carbon to site themselves in the Borough’s area. If companies site themselves in the Borough, this has economic benefits for the community. James went on to state: “Why does the council want them to do it? It enables the Borough as a community to benefit from lower carbon energy. Does it make them a fortune? No. Is energy generation important to companies coming into the Borough. No.

The benefit is that the Borough as a business community is attracting businesses to in the Borough and to invest in the town centre. Companies can benefit from the lower CO₂ network.”

In relation to energy customers, James stated: “If you assume that 14% of consumers are pro-environmental, then 14% gain benefit from what we do”. ENER provide low carbon energy so provision aligns with consumer social and environmental values. A key context is how ENER and the Borough council are perceived as this can effect whether ENER’s other customers ‘the Borough council’ are re-elected so there is a linkage here. Delivery of low carbon energy and policy is seen by ENER as helping create a positive perception of the organisation and the Borough council (particularly amongst energy customers that are pro-environmental, but so does delivering of policy in a cost efficient manner (not impacting council tax bills).

The context of the operation of the electricity system is also important to how ENER creates value due to the demand response energy services they can provide, outlined further below. We briefly explain this in the footnote⁶ below.

6.2. How the business model works in this context

In terms of Customer Relationship and Sensing, ENER have a three sided business model as they have pre-dominantly three different sets of paying customers : 1. local energy customers; 2. the council who fund ENER to deliver policy; 3. industry and other customers who pay for low carbon technology

⁶ The UK national grid for electricity experiences huge peaks and troughs from various sources and these can vary depending on the day. This variance in demand creates inefficiencies both economically and environmentally. Firstly, being in a predominantly preventative paradigm, when demand reaches very high levels, there needs to be enough power generation to meet these peak demands, otherwise this can result in ‘blackouts’ (as can too much generation and not enough demand) which can cause huge disruption and financial cost to society. For much of the time, this extra preventative generation will not be required, so investments in these generators are inefficient as they are not being used much of the time. Additionally, to cope with the very high peaks, there needs to be enough electricity transmission and distribution infrastructure/re-enforcement to cope with the high peaks that that can occur, this is extremely costly as set out in Bradley et al (2013). If peaks can be permanently reduced, extra re-enforcement costs can be avoided. In environmental terms the generators that come on last to fill high peaks, tend to be the least efficient in terms of fuel use and this has both economic and environmental implications (more costly and more polluting than average generation). In future renewables and nuclear will add to intermittency problems of the system, but incorporating more renewables is essential to reducing the carbon intensity of the electricity system. Given this future situation, there is a choice, either we keep building ever increasing flexible, coal/gas generation and re-enforcement to deal with peaks which will be extremely costly or we develop an electricity system with a new paradigm in electricity management that takes a different approach to deal with peaks and troughs, known as demand response. This is where the electricity system and infrastructure that use electricity (such as buildings and electric vehicles/water heaters) is designed and consumers educated and incentivised to respond to peaks and troughs in the electricity system and where actors such as aggregators and other help co-ordinate the response (as opposed to a gas fired power station).

consultancy. The relationships can be described as follows: domestic energy customers (one to one personal); commercial energy customers (one to one, personal); Consultancy (personal); borough council (strongly personal). Having a personalised relationship improves energy customer relations (perceived to be of benefit to the reputation of the council who ENER serve - the other customer). A closer relationship with these customers also helps with debt collection from energy bills, ensuring revenue. A close relationship with the Council enables ENER to better serve the council's needs and generate greater value for them.

In terms of value chain and linkages, ENER are vertically integrated and a 'boutique' type business where all the value is created and delivered by the organisation with little outsourcing, they undertake generation, sell, meter, distribute and take payment/collect debt relating to energy sales, James describes this vertical integration as follows:

“We start with technology, we have two inputs to the technology, one is raw material gas, and one is the operation and maintenance, the operation and maintenance is carried out by a ENER company, the raw material is converted into product, we sell the product, we meter it, we bill for it, and we receive revenue for it.”

“We have our own distribution network, metering and own billing system”

James further stated: “this enables the company to see the system wide benefit directly” and “Being vertically integrated allows the capture of value, otherwise not possible”. The reasons for this are discussed in Bradley et al (2013), but essentially they can co-ordinate their energy network to make use of combined heat and power in the local area where opportunities exist (generation benefits are realised), and also they can co-ordinate the energy network to provide demand side response services to the national grid and see the financial benefit from this. The company also own the housing stock of their domestic energy customers therefore they are able to put in place efficient energy using appliances for heating and cooling, maximising the efficiency of the low carbon network.

The debt collection activity identified above, is another reasons cited as to why ENER need a close relationship with their energy customers (discussed at the front end of the business model), it helps debt recovery (both through having a good relationship but also better knowledge of the customer). A lot of the key activities also relate to developing a good reputation for the council (value to council in terms of being elected but also gaining future funding), such as engaging with industry conferences and hosting visitors; and information dissemination – the website is also an important distribution channel for this. These activities relate primarily to democratic value (in the sense of being perceived to deliver on policy and be a leader on environmental issues; and also being perceived well by higher tiers of governance) and partly in attaining future funding from various sources for low carbon energy.

In terms of the worth capture mechanisms/ monetisation. Paid for services that ENER Energy provide and monetary exchange value that they capture, this can be split into five categories:

- Domestic and commercial Energy provision (monetary exchange value directly received);
- Demand response (monetary exchange value directly received);
- Local policy delivery for the council (monetary exchange value – via business funding); and
- Council reputation enhancement via low carbon technology demonstration, and provision of low carbon energy network (monetary exchange value - business funding).
- Investment by companies in the centre - of monetary value to council customers.

There are however, a range of direct and indirect non-monetised worth factors, which we term wider societal value, that are not captured in exchange value form.

The company also generates some indirect dis-value as a result of their enacted business model, including emission of GHG and other local polluting gases as a result of the energy production process - though at levels much lower than conventional energy generation. There is also likely to be upstream environmental and social impacts associated with the gas inputs that they use for example pollution (energy use) from oil and gas extraction and health accidents (social) associated with gas extraction. As a third party, it was not viable to apply the framework fully to the extended enterprise and obtain data sufficient to undertake a full life cycle analysis of these wider social and environment impacts.

Companies that apply the framework themselves and have the resources and ability to collect data from their supply chain should implement the framework fully to explore these wider impacts.

7. Discussion and conclusions

The paper presents and applies a framework to investigate business model for sustainable development. The framework synthesises 3 previous business frameworks and builds in new categories and social, environmental and economic considerations in order to make ‘fit’ for the purpose of investigating business models for sustainable development. The framework is novel from its synthesis, new categories, and the ‘torch light articulation’ but also due to clearly building in environmental and social indicators and indirect impacts into the business model framework. No previous business model frameworks consider these indirect impacts. The framework was applied to a case study to demonstrate its capabilities in unravelling and understanding a company’s business model. We start this section by providing a summary of the case study’s business model:

The company (ENER) creates environmental⁷, economic⁸, and social⁹ value via exploiting low carbon energy technology, and gaining financial benefit for low carbon energy generation/ balancing (*monetisation*), these financial incentives and policy requirements are created via national and local energy/environmental (carbon) policy context (*use of the value proposition in a given context*); and the necessity to implementation at low cost to avoid higher council tax bills (*context*). The resulting low carbon area attracts businesses to the area that need to demonstrate low carbon credential for various reasons (*context*). This results in increased revenue and jobs for the borough as well as

⁷ Via low carbon energy/implementation of policy;

⁸ Via council payment; energy services and consultancy services (monetisation) but also wider economic value for the community by attracting low carbon industry to site in the area;

⁹ Via policy delivery at low cost (reducing residents council tax bills), democratic social value for the council and jobs related social value.

reputational benefits for the council (locally, nationally and globally) in relation to meeting environmental credentials and policy implementation and re-election (*worth in a given context*).

The framework was applied to a case study of an energy provider and the application allowed a rich and powerful understanding of how ENER's business model actually works in practice. Such case study's provide new insight on business models for sustainable development and the interaction of different types of value and how they are captured. From the case study it was very clear that the new category in the business model framework 'customers/stakeholders use of value proposition in their context' was critical in explaining the emergence of a range of different types of value that the business model created and captured, there was strong interaction between the context and the different types of social and environmental value created and exchange value. For example the actions of ENER resulted in reputational benefits (social value) and policy implementation (social and environmental value) as well as democratic (social) value creation and capture via funding opportunities, achievement of policy goals and re-election by the electorate. For ENER this translated into economic exchange value as their customer, the council funded them. Interestingly, the MD perceived that there was also a link between people's values on the one hand (pro-environmental) and the electorate perception of the council (implementing their low carbon policy) which the MD believed had electoral value (social) to the council. Implementation of the low carbon policy also was perceived by the MD to draw certain types of businesses into the council area, ultimately therefore translating into economic value for the council and the local area. As a third party conducted the case study and the limited engagement with the company, it was difficult to apply the framework to look in depth at the indirect social, environmental and economic value created, but the framework has set in place the means and a navigable path for companies to do this given their resources and time. This is also a valuable contribution.

Future research to look at sustainable business models should look to implement the framework on other case studies. As far as the authors are aware this is the first business model framework that can

be applied with businesses to provide a deep understanding of their business model and that takes account of and builds in approaches to provide an understanding of social, environmental value (as well as economic). It also seems to be the first business models framework to look at indirect impacts and how they can be captured. The latter is important not just for an assessment of business models for sustainable development but also business models in general – i.e. what is their overall economic impact. Frameworks such as the one presented can provide an alternative integrated and interactive understanding of how businesses are structured and designed to generate value and sustainable development, as well as current gaps (e.g. dependence on gas and associated upstream environmental and social impacts) as an alternative to purely accounting approaches for sustainability such triple bottom line that are more one dimensional (Norman and MacDonald 2003).

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Appendix 1:

1.1 Understanding economy wide value/dis value for the three dimensions

2.1.1 Environmental value

Indicators of environmental value/dis-value most relevant to a business model can be largely indicated for most businesses by focusing on four areas: material inputs and emissions, natural capital and ecosystem services.

Material inputs and emissions

Given that scale of resource use to supply consumer goods and services is the main reason that society stands so close to breaching many boundaries set out for key global environmental pressures (Allwood 2011; Rockström et al 2009), we advocate that a core part of business models for sustainable development should be also to minimise material inputs to production. Therefore we advocate that when understanding a business model for sustainable development, one should account for its material/resource inputs. Accounting for these material inputs can also help in indicating the likely economy wide environmental impacts of firms (embodied environmental impacts that result from purchased inputs).

Analysis of direct environmental value or dis-value of firms

The first port of call when exploring the environmental value or disvalue of the business is to identify its direct¹⁰ environmental impact for key global environmental pressures (and other environmental impacts). For this one can for example measure fuel use by a business and then estimate CO₂ based on applying relevant combustion emissions coefficients to the fuel use. This corresponds with how emissions of CO₂ from fuel use are estimated at the national level, other GHGs should also be considered. For measuring direct environmental indicators or impacts of businesses see the GHG Protocol, one can also extract data on other direct environmental impacts of the company from ISO 14000 environmental management systems etc. Direct chemical releases should be included in this section.

Quantifying economy wide environmental impacts of businesses is more difficult.

We identify three different approaches for analysis of indirect environmental (impact) dis-value associated with a company inputs to production.

- 1.) Indirect water use, emissions and land use are embodied in inputs/resources brought into a company for its production. A straightforward way (as it requires low levels of effort) to understand how a business model influences these, would be to measure the direct material inputs purchased and identify the priority materials/resources (prioritised in terms of embodied environmental impact from looking in the literature) for the different materials/resources. Business models can then be explored and compared to see the extent of key material/resource usage required for delivering the same or similar needs and wants.

¹⁰ In this study direct emissions are the emissions that occur from processes owned, operated or controlled by a business of concern. Indirect emissions are defined as those emissions associated with processes that occur in the life cycle of a product prior to the processes owned, operated or controlled by the business of concern. The indirect definition corresponds with the upstream GHG emissions definition by [British Standards Institution, Publicly Available Specification 2050 \(BSI, 2008\)](#).

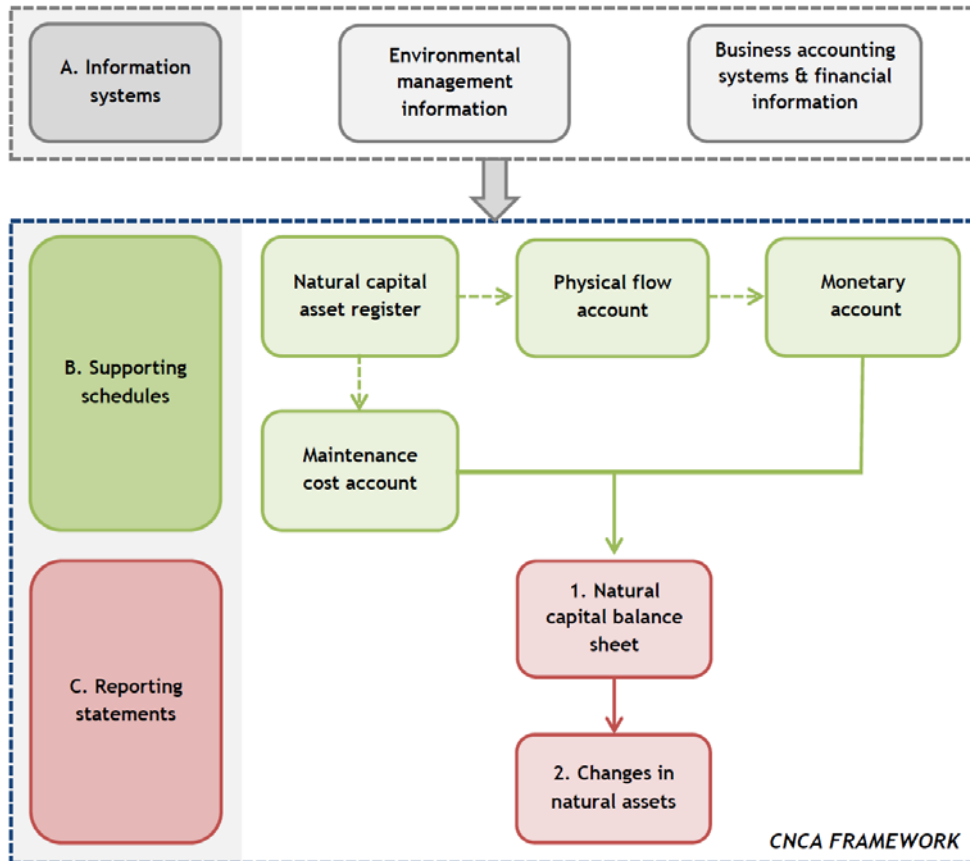
- 2.) Comparative analysis of businesses models can be based on environmental input-output modelling of water use, emissions and land use (See Bradley et al 2013 and 2015) for examples of this sort of approach. Measurement of indirect emissions at the national level also applies the environmental input-output approach. When looking at businesses, it is critical that the provision perspective (Bradley et al 2013) is applied when comparing two model case businesses as this addresses all impacts embodied in provision, the consumption modelling perspective is not appropriate. If one is looking at embodied impacts of a group of businesses together however, then one must be careful to avoid double counting, as discussed in the paper.
- 3.) Consequential analysis where one looks in great detail at the actual comparative environmental dis-value of two different actual existing businesses in the same sector with different environmental impacts using process based life cycle analysis. This type of analysis is highly expensive, and likely to be of most concern to companies trying to demonstrate the environmental credentials of their business model. One can apply hybrid environmental input-output analysis which conducts this in conjunction with LCA to reduce the use of expensive LCA (Bradley et al 2013).

Natural capital

Natural capital can be defined as: “the elements of nature that produce value or benefits to people (directly and indirectly), such as the stock of forests, rivers, land, minerals and oceans, as well as the natural processes and functions that underpin their operation.” (Natural Capital Committee 2013, p.10). This can include such things as provisioning services (agriculture and farming for food etc.); regulating services (water purification, flood defence); cultural services, (heritage recreation, aesthetics) supporting services (biodiversity, soil function). The last category may not feature in the accounts to avoid double counting.

The UK governments Natural Capital Committee (NCC) advocate that organisations should create a register of natural capital for which they are responsible and use this to maintain its quality and quantity (Natural Capital Committee 2015). Measuring and monitoring of natural capital is occurring at the national level, but they have also developed a corporate natural capital accounting (CNCA) framework, that businesses can apply at the micro level. In line with our approach of having accounts at the micro level that broadly reflect measurements at the macro level, we now briefly set out the corporate natural accounting framework as it allows one to understand how a particular businesses current activities are effecting the natural capital that it is responsible for. This should be considered when looking at how the business model impacts value/dis value generated. The CNCA framework has two reporting statements; a natural capital balance sheet (reporting the value of natural capital assets and costs associated in maintenance of the capital assets) and statements of changes in natural assets (this identifies the change in asset values and liabilities over a given period e.g. a year). The accounts can sit alongside tradition financial and management accounts.

Figure 1A: CNCA framework, reporting statements, supporting schedules and information



Following the guidelines should result in a natural capital balance sheet like the example below. We do not go in detail on the guidelines here but in line with our principle of linking with National accounts, we advocate that this guidance is followed in order to understand the impact that a given businesses operations (and business model) is having on owned natural capital for a given period of time. Privately owned natural capital assets are typically not reflected in market prices. It is also noteworthy that most accounting frameworks tend to focus on recording changes in flows and regularly neglect changes in underpinning assets (or stocks) that they are derived (Natural Capital Committee 2015). The guidance states that not all capital assets may need to be included, provided this does not give a misleading picture of profit and loss.

Table 1: Illustrative natural capital balance sheet

	Reporting year £'m					
	Non-Renewables		Renewables		Total Value	Of which reported in fin. accts.
	Private	External	Private	External		
Assets						
1 Baseline value	50	-	40	60	150	
2 Cumulative gains / (losses)					-	
3 Additions (disposals/consumption)					-	
4 Revaluations and adjustments					-	
Gross asset value	50	-	40	60	150	40
Liabilities						
5 Legal provisions					(5)	(4)
6 Other maintenance provisions					(15)	
Total liabilities					(20)	(4)
Total net natural capital					130	36

Economy wide natural capital impacts from the inputs that a firm buys are more likely to be accounted for in market prices as discussed above, but an indicator of the extent of use of such resources is indicated but the extent of material inputs used by the business in its production and provision.

2.2.2 Economic and social value

In this section we look at indicators of direct economic and social value/disvalue. A company can have.

Direct financial value that a company generates

At the micro individual company level, for most businesses, business success is first and foremost measured in terms of the profit (value added) that they generate. Capturing financial value of the overall business should be possible and fairly straight forward from observing profits from company accounts. Looking at specific parts, at higher levels of disaggregation for the business model, is likely to however require data input from the business, and this may not always be forthcoming, due to respondents wanting to keep confidentiality in relation to their business model. In considering direct financial value that a company generates, one might also like to consider how much of the value created by an organisation is paid to its employees and where profits go e.g. to owners or shareholders of the organisation or re-investment back into the organisation.

Direct social value

In the context of direct social indicators, we count these as indicators relating to employees of the organisation, indirect are seen as relating to any other person other than employees (wider society). In order to look at indicators of direct social value/disvalue the recent social indicators listed in ISO 26000 responsibility standards, these are standards are in early stages of development but provide some insight. Direct indicators/impacts by changes in a company's business model are highlighted in green.

Table 2: Indicators from the ISO 26000 social responsibility standards (direct highlighted)

Human rights	Due diligence	Fair operating practices	Anti-corruption	Consumer issues	Fair marketing, factual and unbiased information and fair contractual practices
	Human rights risk situations		Responsible political involvement		Protecting consumers health and safety
	Avoidance of complicity		Fair competition	Sustainable consumption	
	Resolving grievances		Promoting social responsibility in the value chain	Consumer service, support, and complaint and dispute resolution	
	Discrimination and vulnerable groups	Respect for property rights	Consumer data protection and privacy		
	Civil and political rights	Community involvement and development	Community involvement (Phils framework)	Access to essential services	
	Economics, social and cultural rights		Education and culture	Education and awareness (e.g. smoking pictures)	
Fundamental principles and rights at work	Employment creation and skills development		The environment	Prevention of pollution	
Labour practices	Employee and employment relationships		Technology development and access		Sustainable resource use
	Conditions of work and social protection		Wealth and ioncome creation		Climate change mitigation and adaptation
	Social dialogue		Health and safety at work		Protection of the environment, biodiversity and restoration of natural habitats
	Health and safety at work		Socail investment		
	Human development and training in the workplace				

Economy wide (indirect) indicators of social and economic value

Economic and social value that a company can generate economy wide can be understood by looking at measures of wellbeing at a national or international level. Recently the UK has developed national level indicators of wellbeing. Different types of social value/disvalue that can occur economy wide, can be scoped out by looking at the different measures for wellbeing that the UK Office for National Statistics has implemented to measure wellbeing. Table 5, identifies the key headline indicators for well-being in UK society, and various measures for each. In appendix 1 we identify how a change in business model might impact relevant indicators of (social value) as seen via wellbeing in an economy wide context.

Table 3: Indicators of social and economic value from ONS (2015)

Economy	Real net disposable income	Personal well-being	Very high life satisfaction *	What we do	Unemployment rate
	Public sector net debt		Very high worthwhile rating		Satisfaction with job *
	Inflation		Very high rating of happiness *		Satisfaction with leisure time
Education	Human capital *		Very low anxiety yeasterday *		Volunteering *
	Five or more qualifications *		Population mental wellbeing *		Engagement with arts and culture
	No qualifications	Our relations hips	Satisfaction with my family life		Sport participation
Government	Voter turnout		Satisfaction with social life		Where we live
	Trust in government	Someone to rely on	Safe walking after dark		
Natural Environment	Green house gas emissions	Health	Healthy life expectancy at birth		Accessed natural environment
	Protected areas in the UK		Illness and disability *		Neighbourhood belonging
	Renewable energy consumption		Satisfied with health		Transport access to services
	Recycling rates		Evidence of depresion or anxiety		Satisfaction with accomodation
			Personal finances	Satisfied with income *	
				Repeated difficulty with finances *	

Highlighted measures are believed to be those where businesses and business models could impact social value (through impacting well-being) most strongly those highlighted in yellow (indirect), those categories with a * indicate that the category is also relevant in terms of direct effects. This not to say that businesses could not impact non-highlighted indicators, but highlighted ones are those seen to be most likely impacted. Beyond those indicators identified above the ISO 26000 social responsibility standards pick up on some additional economy wide social indicators as identified below that could also potentially be impacted by a company's business model.

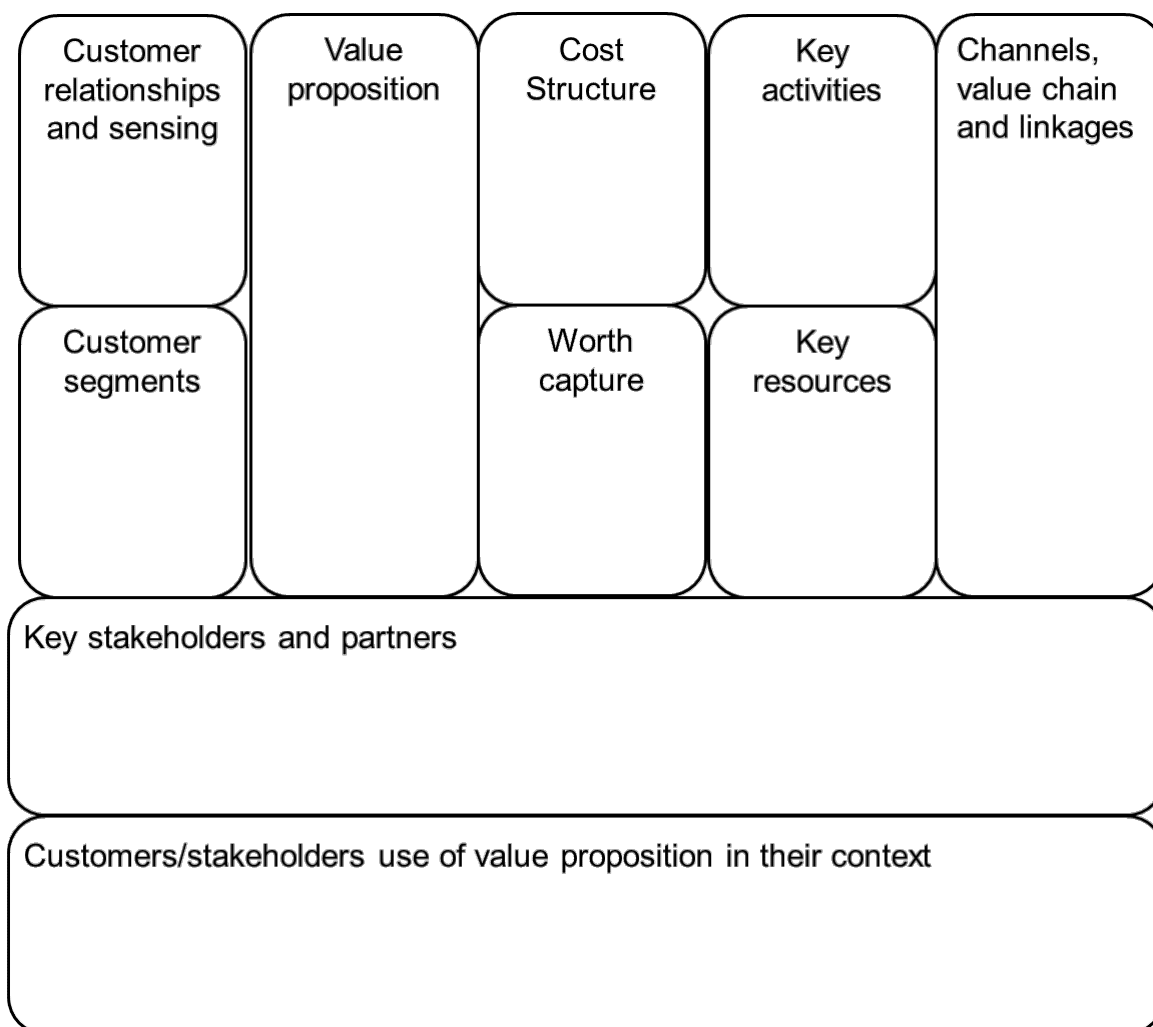
Table 4: Indicators from the ISO 26000 social responsibility standards (economy wide highlighted)

Human rights	Due diligence	Fair operating practices	Anti-corruption	Consumer issues	Fair marketing, factual and unbiased information and fair contractual practices
	Human rights risk situations		Responsible political involvement		Protecting consumers health and safety
	Avoidance of complicity		Fair competition		Sustainable consumption
	Resolving grievances		Promoting social responsibility in the value chain	Consumer service, support, and complaint and dispute resolution	
	Discrimination and vulnerable groups		Respect for property rights	Consumer data protection and privacy	
	Civil and political rights	Community involvement and development	Community involvement (Phils framework)		Access to essential services
	Economics, social and cultural rights		Education and culture		Education and awareness (e.g. smoking pictures)
	Fundamental principles and rights at work	Employment creation and skills development	The environment	Prevention of pollution	
Labour practices	Employee and employment relationships	Technology development and access		Sustainable resource use	
	Conditions of work and social protection	Wealth and ioncome creation	Climate change mitigation and adaptation		
	Social dialogue	Health and safety at work	Protection of the environment, biodiversity and restoration of natural habitats		
	Health and safety at work	Socail investment			
	Human development and training in the workplace				

Now that we have identified the range of potential indicators of value or disvalue (environmental, economic and social) that could be considered when looking at business models for sustainable

development, the study now moves on to look at strengths and weaknesses of three popular business model frameworks in the literature.

Appendix 2: Framework for exploring business models for sustainable development (Bradley et al 2015)



Appendix 3 (questions applied by the framework):

Customer Segments:

Do you focus on mass markets or a particular segment?

Are there particular segments that you recognise and target, and if so what defines them?

Do you target many segments or very few?

Do customers have some or different needs?

Customer Relationships:

Are the users paying? If not who is paying?

Key Stakeholders and Partners:

These are discussed with the company

Key-activities:

These are discussed with the company.

Key Resources:

These are discussed with the company. Collect information on physical assets such as buildings and machines. Human resources, intellectual property, brands (patents/copyright.), financial resources etc.

Channels, value chain and linkages:

Is the supply chain integrated, hierarchical or networked?

Cost structure:

Please identify the main costs of operating the business?

What fixed and variable costs do you have?

How do you minimise costs?

What economics of scale or scope exist?

Worth Capture:

What are your revenue streams?

What, when and how is money raised?

What are your financing options?

What are the forms of non-financial value that the business seeks to create?

How do you evidence the impact of this value?

Customer/stakeholder use of value proposition in their context:

What are the different contexts in which the customer uses your offer?

How does context affect the value proposition?

Do key resources change the context?

Given different contexts, how does the value of the proposition change from the customer perspective?

What are the social and environmental impacts that occur in society during consumption/use of your product and services?

Where is your production occurring?

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