

Submission by Sustainable and Resilient Infrastructure Group at the University of Leeds to the discussion paper concerning Non-traditional Business Models

Catherine Bale, Stephen Hall and Katy Roelich

May 2015

1 Introduction

SuRe-Infrastructure is a collective of researchers and projects across the University of Leeds with common research interests in the links between infrastructure, resilience and sustainable energy and resource use. This research group investigates the central role infrastructure plays in enabling economic activity, providing society's basic wants and needs and mediating resource consumption. This discussion response draws on empirical evidence from research under several projects conducted by the authors of this response within the group supported by RCUK grant funding^{1,2}.

This group recognises this consultation is timely and is in general a very well thought through discussion piece and the start of a much needed conversation. In particular the broad focus and opportunity to submit responses in an open discussion document is welcome and the discussion document has been thoughtfully framed. Our key contributions to this discussion are:

The interdependency of the regulated electricity and gas utilities with the heat system is underrepresented throughout the discussion document. Efforts to decarbonise the heat system, in part through development of heat networks, will impact on NTBMs for all actors.

Demand reduction is underrepresented throughout the discussion document despite the fact that many of the wider benefits described in the document accrue from business models centred on demand reduction. Significant regulatory change is needed to enable business models centred on demand reduction.

Distribution is underrepresented throughout the discussion document: more needs to be done to describe the landscape of organisational arrangements in the DNO space and learn from EU nations where municipal and citizen ownership of distribution infrastructures is more commonplace.

There is some confusion between business models and actors which should be clarified, particularly because the motivations of local actors differ significantly from private sector actors.

NTBM create multiple benefits which accrue to multiple actors and systems many of which accrue beyond the energy system. More sophisticated approaches to governance are needed to account for this diversity in value creation and appropriation.

There is a conflict between the remit of Ofgem (the energy regulator) and the potential for NTBMs to deliver significant value beyond the energy system. A more co-ordinated response to regulation and policy is required to exploit these opportunities.

¹ Including the UK Engineering and Physical Sciences Research Council (EPSRC) and Economic and Social Science Research Council (ESRC) funded 'iBUILD: Infrastructure BUbusiness models, valuation and Innovation for Local Delivery' project (Ref.: EP/ K012398/1); EPSRC funded 'Realising Transition Pathways – Whole Systems Analysis for a UK More Electric Low Carbon Energy Future' project (Ref.: EP/K005316/1); Catherine Bale's EPSRC funded Postdoctoral Fellowship: Reducing heat demand in cities (Ref. EP/K022288/1); and EPSRC funded Land of the MUSCos (Ref.: EP/J00555X/1). The views expressed here are those of the authors alone, and do not necessarily reflect the views of project partners or funders.

² Note that a separate response has been provided by the iBuild consortium which is broader in coverage but less detailed than this document. We have co-ordinated during the completion of these responses.

2 Response to questions

Section 1

What is your view on our definition of non-traditional business models?

We would suggest changing the wording slightly to reflect that it is organisations that offer products and services, not business models themselves. “Organisations can use business models to offer new product or services, or new ways of delivering these, that are different to those traditionally provided in the existing energy market”.

In addition, we propose that it would be helpful to make the distinction between non-traditional actors who are entering the energy market (e.g. local authorities and community groups) and non-traditional-business models that can be implemented by any organisation. Traditional actors e.g. energy companies, may use NTBMs and non-traditional actors may use traditional business models (e.g. utility supply models); however, there are many different combinations of approach.

The discussion paper does an excellent job of defining ‘non-traditionality’ in terms of value propositions, motivations and organisational arrangements. Whilst value propositions and motivations are relatively unproblematic in terms of political acceptability, what will be critical in the future will be a serious discussion about whether or not system regulation is able to usefully distinguish between different organisational arrangements. The core concern will be whether Ofgem can individually or in partnership, identify areas in system regulation where profit maximisation behaviour has been assumed, and consider where and how different organisational arrangements require a different set of assumptions to ensure consumer protection. This research team is actively engaged in this question and is open to further discussion.

How we can engage with NTBMs more effectively in the future?

Currently there is a distinct lack of international comparison in the discussion paper. Whilst we recognise this is likely due to time and resource constraints, and the particularities of the UK market, we still feel more could be done to learn from the experience of counterparts, particularly in the EU.

Section 2

We would like to hear your views on the drivers for market entry. Do you think there are other important drivers?

We have conducted several pieces of work that investigate the motivations and drivers of non-traditional actors (local authorities and community groups in particular) in delivering energy infrastructure and services [1-4]. Here we summarise some key points in relation to the drivers set out in the consultation report.

The link with heat: Within section 2.2 on the low carbon energy transition, we feel that decarbonisation of heat should be explicitly mentioned, rather than solely with regard to its relation to electricity demand.

There appears to have been an increase in the number of non-traditional actors (in particular, local authorities) interested in heat networks (in part, as a result of DECC’s Heat Network Delivery Unit). Local authority are taking on new roles in delivering heat networks, and therefore taking a new role in delivering energy infrastructure more broadly, meaning that they are considering new business

models which span both heat and electricity (through CHP and in conjunction with demand-side measures). Activity in the heat sector is intrinsically linked to consideration of regulation in the electricity sector.

Specific focus on fuel poverty: For non-traditional local actors, social drivers such a reduction of fuel poverty, regeneration of geographic areas, local job creation and tariff fairness are often significant drivers and NTBMs may be more appropriate for delivering value in line with these drivers. Reference should be made also to the Fuel Poverty (England) Regulations 2014³.

Re-localisation of energy value: Another missing driver is the ‘re-localisation’ of energy value. Much of the ownership structures of the traditional utilities are largely diverse and international, with very little ownership by individual UK shareholders [5]. The citizen finance, municipal ownership and community energy sectors are very much aware of this [6-7], and feel it has a detrimental effect on innovation, agility and change within the sector. International utility structures are likely to seek highest return on investment across a broad international context and thus, have very little interest in the economic health of the area in which NTBMs originate. In short, much of the economic value of energy provision is ‘offshored’. The need to re-localise an element of energy system value, ownership and control is therefore a significant driver for NTBMs. Whilst OFGEM is rightly ambivalent to the political orientation of the organisations and sector it regulates, these drivers are real, and should be included in this discussion as they have the potential to impact on the construction and operation of new business models and organisational forms in the sector.

Section 3

Have we accurately described the NTBM environment? Have we missed something?

Heat underrepresented: Again, in relation to our previous point, the links with the unregulated heat system should be included.

Demand reduction underrepresented: Many non-traditional actors would like to focus on reducing demand for energy (which is linked to both climate change mitigation and fuel poverty alleviation). This is one of the hardest areas around which to develop business models within the current regulatory regime and warrants specific attention. Demand reduction offers a significant range of benefits for both the energy system (reducing the need for network reinforcement or investing in new generation capacity, lowering the cost of climate change mitigation), the end users (lowering energy bills) and the wider economy (reducing public health spending and job creation etc [8]) but is currently under-represented in the consultation document.

Distribution underrepresented: The discussion document does not adequately describe non-traditional business models at work in the electricity distribution space. Internationally speaking, there are a range of different organisational arrangements at work for distribution networks. This can range from DNO’s with Co-operative (mutual) organisational arrangements (predominantly in the USA and Germany) to IDNO’s in the UK. More needs to be done to describe the landscape of organisational arrangements in the DNO space and learn from experience in partner EU nations where municipal and citizen ownership of distribution infrastructures is more commonplace.

³ <http://www.legislation.gov.uk/ukxi/2014/3220/made>

There are numerous innovative infrastructure financing arrangements at work across the transport, water and telecommunications sectors that make space for new actors to invest in innovation or in passive provision (building more capacity into infrastructure networks ahead of uncertain use profiles) but the current RIIO framework, whilst a step forward in terms of allowing DNOs to innovate, is unable to incorporate the values smart distribution grids can confer on other parts of the economy.

The ‘Local services’ category describes actors, not business models: Greater differentiation is needed between actors implementing business models and the business models themselves. A matrix might be a more appropriate way to capture the range of opportunities with actors along one axis and business models along another.

We’d like to learn more about organisations using NTBMs. If you are prepared to discuss this, please contact us

We have written up several case studies related to non-traditional business models, and would be happy to share these. Some are contained within the literature appended, but we could look to use the underlying data to extract different information if that is helpful. We’d be happy to discuss this further.

Section 4

Our main focus in this paper is on regulatory issues arising from future energy market transformation, but we recognise that there are relevant issues within current regulation. Please let us know if there are any other issues?

Standard Licence Condition (SLC) 22B.2 prevents suppliers from making available more than four of its core tariffs (for each category of metering arrangement) to a domestic customer at any time, in any region. This could limit the tariffs that local suppliers could offer if they enter into an agreement with a licensed supplier. A temporary arrangement has been put in place that applies the tariff cap to white label supplier separately to their licensed supplier and does not set a limit on the number of white labels that a supplier can have. It is proposed that these arrangements be extended to apply to all new white labels, applying from July 2015 [9]. Paragraph 36 of SLC 22B does allow for suppliers to seek a derogation from the four Core Tariff rule, however, it is not clear whether these arrangements will extend to other archetypes which rely on partnering with a licensed supplier, such as the peer-to-peer and local aggregator archetypes. This may act as a brake on new local supply archetypes outside the white label derogation, and is not compatible with the growth of the sector.

Current trading arrangements assume that contractual balance will be achieved at a national level which doesn’t exclude local operators per se but puts them in a weak position, compared to national operators. Local operators pay a penalty with regard to cost of services or energy that takes into account the risk that the third party, with which they must contract, deems that they face in association with balancing [10]. This has been shown to result in significant cost differences (up to 3.5p/ kWh higher), which mean that it is very hard for local tariff offerings to compete with national suppliers [10]. The lack of more representative local balancing arrangements with a local balancing unit presents a significant barrier to local suppliers.

Many NTBMs require a third party licensed supplier (TPLS) to deliver services on behalf of local actors. The unwillingness of many of the major suppliers to engage in this kind of arrangement or investigate the real costs of doing so has led to concern that the contractual relationships and costs involved between TPLSs and NTBMs are unregulated and may undermine otherwise viable business cases for NTBMs [4].

The lack of replicable and tested business models is a significant barrier to local energy supply, especially for archetypes including demand reduction. This means that not only does each organisation have to navigate the complex regulatory environment themselves but also must produce all contractual documents from scratch [4].

Emerging regulatory developments: it would be worth mentioning the market for heat demand, heat and co-generation

Section 5

What are the benefits of different NTBMs to energy consumers?

The multiple benefits (at the macro-economic scale) of NTBMs focussed on demand reduction are clearly articulated in the IEA report on the multiple benefits of energy efficiency [8]. These macro-economic benefits will indirectly benefit customers.

Our work on local electricity supply identified a series of opportunities for the energy system and end users of expanding the local supply market, including [4]:

1. Better routes to market for local generation. Arrangements under Electricity Market Reform (EMR) are likely to constrain the market for small scale power purchase agreements. The creation of new NTBMs has the potential to give community and small scale generators a better route to market for the power they produce and to support the burgeoning local generation sector.

2. Fulfilling the potential of the demand side. Aside from isolated examples with large industrial customers, the benefits of demand side management are being missed in the UK, impacting customer bills and making energy infrastructures more expensive. For domestic and SME customers, the local benefits offered by demand side services are currently unavailable, due to the undeveloped local supply market. Fostering this market will validate the claims that these services could lead to lower household bills and increased system efficiency.

3. Real energy efficiency gains. To date energy efficiency programs have been delivered through national utilities. This faces two problems, the utility business model struggles to operate if substantive efficiency gains are made by all customers, and many customers have not engaged with their energy supplier on efficiency programmes. There is a missed opportunity to roll out the energy service company (ESCO) business model in UK, in part due to regulatory barriers and in part due to uncertainty over returns and organisational arrangements. NTBMs can begin to address this, but incentivising Innovation in this space is critical.

4. Re-localising energy value. Citizens, Municipalities and regional development bodies in many European countries have begun to see energy value as a key component of economic prosperity. They are beginning to play a more active role in the generation and supply of their own energy needs. In the UK, our market structure has resulted in a significant 'leakage' of energy value out of

cities, regions and ultimately the nation. Enabling new, local business models to be tested that reverse this loss of value is an important next step.

Are these benefits experienced by all energy consumers or only those directly receiving the NTBM's services?

Many of the macro-economic and energy system benefits described above will be experienced by energy customers beyond those directly receiving the NTBM's services, for example increased jobs, reduced health costs, reduced energy infrastructure costs and enabling decentralised generation.

Are there additional wider benefits to the energy system and beyond it?

Many of the benefits described above benefit the wider energy system, especially better routes to market for local generation, fulfilling the potential of the demand side, real energy efficiency gains and re-localising energy value.

While we believe there to be multiple benefits to the use of NTBMs (incorporating economic, environmental and social value), the economic benefits to non-traditional actors, such as local authorities, are particularly clear and are key when they are currently facing significant funding cuts. We have specific evidence of the long-term economic value to the City of Leeds of investing in wind and solar PV schemes on their own estates and land [11]. Resource assessment modelling was used to estimate the renewable electricity generation potential of over 6,500 sites owned by the City Council. Combined with information on generation and export revenues, avoided electricity costs and operational costs to assess net returns, of the sites analysed, over three-quarters delivered a positive return for all generation options considered, with 334 sites returning a net present value of £100,000 or more for at least one option. Further details can be provided on request from a paper detailing this work that is currently in peer review.

Which of these benefits should be taken account of in regulatory policy-making and decision-taking and why?

The remit of Ofgem as the energy regulator makes it problematic to take some of the macro-economic benefits into account in regulatory processes – see response to 'Other comments below'. However, the wider energy system benefits, such as deferring investment in networks and generation capacity (from demand reduction) and creating better routes to market for decentralised energy (reducing the cost of renewable energy) should be fully incorporated into the regulatory system. A renewed focus on enabling demand reduction to play a fuller part in energy system transformation is essential if some NTBMs are to flourish.

The wider benefits of NTBMs, such as fuel poverty alleviation, lower health costs and job creation should also be addressed by policy makers. This would need a more systemic (and cross-departmental approach to policy-making) which enables/encourages energy to generate benefits accrued to a different government departments.

Are there energy system costs or risks from any of the NTBMs? How might these be addressed?

No response

How will NTBMs help to drive innovation within the energy system?

No response

How could NTBMs potentially transform the energy market and what fundamental challenges to regulatory arrangements could this entail?

No response

How could regulatory arrangements change to accommodate NTBMs?

Clarify the requirement for national supply: Some NTBMs may aim to exploit some of the benefits described above by focussing on particular geographies, but regulation is not suited to this. New frameworks and mechanisms for customer protection for geographic supply may be needed if there is to be an amendment to the SLC conditions to allow for fully licensed suppliers to unambiguously offer geographically bounded tariffs. Currently these conditions are circumvented via bespoke derogations or ‘work around’ arrangements. This is neither necessary nor conducive to the growth of the sector. Consumer protection and ensuring geographic suppliers do not ‘cherry pick’ customers can be managed by requiring geographic suppliers to demonstrate how their business models are compatible with securing benefits, with additional conditions on offering tariffs to all customers within a given area and ensuring said areas are broad enough to cover multiple customer types.

Amend the requirement for fully licensed suppliers to offer only four tariffs for those areas operating local supply NTBMs: Fully licensed suppliers looking to contract with local actors that need this relationship are being penalised by the need to offer only four main tariffs. This has been facilitated by a temporary arrangement for the ‘local white labelling’ sector but will need to be addressed as new NTBMs proliferate. This issue is easy to anticipate and should be dealt with before it acts as a constraint to new market entrants.

Allow for a ‘local balancing unit’ as specified by Elexon [10] or as a result of further development: This would allow new local business models such as aggregators and junior suppliers to maximise the benefits of local supply and demand management, offering benefits to suppliers, network managers and system operators. These proposals have been developed in detail by Cornwall Energy and Elexon to the point where the specific license conditions that need to be amended have been identified [10].

Investigate the opportunity to allow local ESCo or multi-utility models, which incentivise substantive efficiency gains, to be exempt from supplier switching legislation: As a longer term activity the requirements on suppliers to ensure the domestic consumers right to switch supplier need reviewing to make space for domestic energy performance contracting that can be delivered where it is relevant, i.e. the household energy bill. New ways of securing consumer protection and local referenda could replace the current model and allow for longer term domestic contracts. This would unlock new opportunities for energy efficiency in deep retrofit, micro generation and appliance efficiency. Whilst this option may need regulatory changes at a European level, and are therefore not in the gift of national partners, they are nonetheless necessary to realise the real gains available in the energy efficiency space.

Investigate the opportunities for demand reduction centred business models and their treatment in regulation and policy: Much more work needs to be done to investigate how energy demand reduction can be incorporated into markets and incentives. To date, demand reduction has been undervalued in favour of policy mechanisms seen to reduce unit prices as opposed to final bills. Local supply options can deliver demand side services that reduce final bills, deliver benefits to

distribution and transmission system operators and reduce the need for centralised generation investments across the system.

What role do NTBMs and other parties have in managing energy market transformation and regulatory change?

No response

3 Other comments

One of the most crucial issues seems to be the conflict between the remit of Ofgem (the energy regulator) and the potential for NTBMs to deliver significant value beyond the energy system. A more co-ordinated response to regulation and policy is required to exploit these opportunities.

It is important that when we investigate new regulatory mechanisms that we recognise the differences between private sector and what Ofgem terms local actors (including community municipal, housing association and social enterprise actors) and reduce barriers to local NTBMs. Local actors should not be regulated as smaller versions of private actors. Appropriate governance at the local scale should be supported by, and sit parallel to, the national system of energy and water regulation. National government should enable civic actors to develop locally relevant ways of managing the production and distribution of not only financial but also social and environmental value [12].

Appendices

Evidence for this consultation report can be found in the appended documents.

- A. *Spatial mapping tools for district heating (DH): helping local authorities tackle fuel poverty*
- B. *Valuing energy infrastructure: Local authority motivations and national policy*
- C. *Community energy provision: why is it constrained by liberalised markets and how can cities help to overcome these constraints?*
- D. *Local Electricity Supply: opportunities, archetypes and outcomes Municipal energy companies in the UK: Motivations and barriers*
- E. *Distributing Power: A transition to a civic energy future*
- F. *Municipal Energy Companies in the UK: Motivations and barriers*
- G. *Values in the Smart Grid : The co-evolving political economy of smart distribution.*
- H. *Strategic energy planning within local authorities in the UK: A study of the city of Leeds*

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