Energy Innovation Zones – Opportunities, Challenges and Next Steps

Matthew Rhodes[1]

January 2019

Executive Summary

Energy Innovation Zones (EIZs) address multiple energy policy, clean growth and industrial strategy goals. For example, they create opportunities to accelerate transformation of the UK energy system; support national and local industrial and clean growth strategies; deliver on the promise of devolution; increase customer and voter engagement and reduce energy costs.

Development work in the West Midlands suggest EIZs will develop nationally in three categories:

A. ***Infrastructure EIZs***, where local authorities take a stronger role as strategic customers in local energy infrastructure planning and commissioning;
B. ***Services EIZs***, where local communities take responsibility for integrating energy services in better ways, for example to address fuel poverty;
C. ***Market-making EIZs***, which create attractive environments for commercialisation at scale of competing clean energy technologies.

All three categories of EIZ can be piloted in the short-term within existing regulatory and legal structures (but would require some focused support from Government and the regulator because of the complexity and design of existing energy market regulations). In the medium-term, more fundamental regulatory and legal simplifications (brought into sharp focus by the pilot EIZs) will support more efficient outcomes and create a more flexible foundation for future energy system regulation.

A pilot project in the West Midlands, sponsored by BEIS and Ofgem, should set out robust and definitive templates for EIZ development and operation in both medium- and short-term contexts (with and without scope for fundamental regulatory change[2] respectively).

[1] Matthew Rhodes is Chair of Energy Capital in the West Midlands, working for the Mayor. He was a member of the Regional Energy Policy Commission chaired by Sir David King (2017-18) and has led the development and piloting of the EIZ concept across the West Midlands since 2015. Matthew is an Honorary Research Fellow in Energy Policy at Exeter University and has worked in the energy sector since 1994.

[2] For example, changes which require primary legislation.

Introduction

Energy Innovation Zones (EIZs) are a concept developed in response to the almost 'perfect storm' of economic, social, political and environmental challenges currently facing the UK and its energy system:

- the need to underpin national clean growth, industrial and social inclusion strategies with a clean, modern, flexible and cost-competitive energy system;
- the need to keep UK energy costs and system access competitive in the context of global energy system transformation, characterised by:
    - increasing convergence between digital, transport, construction and energy sectors
    - increasing advantages from energy system optimisation at local as well as national level
    - increasing importance of customers in energy systems, with customer behaviours sometimes becoming the main driver of economic and environmental outcomes[3]
    - increasingly strong global, national and local carbon and environmental policy objectives
- growing diversity in the ambitions of local communities and desire to take responsibility and control over aspects of their economies and environments, particularly where they can make a significant difference to both local and national outcomes

Getting the energy system right is an opportunity to address wider national challenges because energy is uniquely ubiquitous: heat, power and light are of fundamental importance to every individual and business in the country.

However, this fundamental importance (coupled with the complexity of the current energy market governance model) also means that it is viewed by some as highly risky to change the national energy system as a whole. There is too much to lose. Another view is that if we persist with the current model we risk holding back growth and competitiveness and therefore we need to make structural changes so that innovation can come through. We need to find a path out of this impasse: EIZs are proposed as such a path because they can be put in place in steps; and because they can work alongside parallel efforts to undertake wider structural regulatory change by feeding in their experiences.

BOX 1: The Energy Innovation Zone: key features

- **Environmental and economic:** Aims to reduce emissions and costs, and stimulate growth and improvements in productivity, by speeding the progress of *clean* energy technologies and business models to market.
- **Competitive:** Creates a competitive market in clean energy infrastructure to meet local needs and priorities, and does not pick low-carbon winners; 'demand pull' not 'technology push'.
- **Regional:** Bridges the yawning gap between people and national energy markets, and taps regional identity to build support for energy innovation.
- **Democratically accountable:** Through local authorities and regional mayors.
- **Social:** Providing appropriate levels of protection for domestic customers, especially those in fuel poverty.
- **Collaborative:** Brings together universities, companies, local authorities and regulators. Lessons about local energy markets, regulation and innovation are shared regularly between EIZs and externally.
- **Independent** of major commercial interests in current or future energy infrastructure, and with transparent governance.
- **Innovative:** Creates a space in which new technologies can be deployed, demonstrated at scale and de-risked for future investment to take to market. Also supports technologies that have already been shown to work, but which need commercial-scale demonstration of the business model. Extends to SMEs the capacity to conduct commercial demonstrations at a scale only previously possible for incumbents with large balance sheets.
- **Clears regulatory and cultural barriers:** Where legislation allows, specific regulations are waived, amended or introduced to permit cost-effective commercial demonstrations. Different EIZs would flex different regulations depending on priorities – district energy, domestic heating, hydrogen, EVs etc. This may in turn lead to the development of new national regulations.
- **Flexible:** Size and focus varies according to local needs and priorities, but an EIZ should be large enough in terms of energy demand to support the development of supply chains, commercial clusters and regional markets.
- **Light on the public purse:** EIZs could be funded by reallocating existing funding streams such as the Energy Company Obligation (ECO), or through other innovative 'value capture' mechanisms, so avoiding the need for substantial extra public expenditure. EIZs could also – like Enterprise Zones – be financed through tax incentives, and in some places it might make economic sense to integrate an EIZ with an existing Enterprise Zone.

[3] For example, project development costs and risks will often be dominated by local responses to technologies such as nuclear, wind power or fracking. Domestic energy bills are increasingly affected by 'demand-side' behaviours and willingness (or not) of customers to participate in system optimisation mechanisms (e.g., smart meters).

What is an Energy Innovation Zone

An EIZ was defined in the report of Sir David King's Regional Energy Policy Commission (2018)[i] as

"*a geographically defined area – a district, or even a whole city – in which innovators can deploy clean energy solutions under bespoke rules and conditions agreed between local authorities and national regulators. Unlike existing approaches, they will work not only to demonstrate new technologies, but also to turn them into fully commercial propositions. Their main focus will be the systems integration of proven low-carbon technologies; the business models and market arrangements needed to support new clean energy services; the regulatory and other barriers that must be overcome, and the policies needed for them to flourish."*[4]

The Report proposed that EIZs have 11 key features, listed in Box 1 (from p13 of the King Report).

In practice, these 11 key features can be captured in four fundamental characteristics common to all EIZs:

1. ***Bounded***. *You know when you are in one.* They have a defined boundary, which can be efficiently recognised (and policed) by regulators, policymakers and customers. This will most often and most conveniently be a geographical boundary aligned with existing political units.
2. ***Customer-led.*** *Customers take some responsibility for long-term management and outcomes in exchange for a share of risks and rewards.* A proportion of the risks and rewards from delivering these objectives are taken by the customers within the EIZ. These customers are represented by the local authority so there is always direct local democratic accountability for outcomes. This means that all EIZs are sponsored and governed by a local authority; EIZ objectives are set and managed by those within the boundary[5]; and all EIZs allow local authorities to secure energy-based revenue streams (i.e., there are value capture mechanisms such as returns on investment through the right to a portion of local energy bills).
3. ***Distinctive.*** *Something is done differently, encouraging new types of technologies, different business models, cleaner outcomes or lower energy costs.* EIZs have a distinctive vision and create an environment for energy systems deployment and management which is in one or more defined ways distinct from the wider national market environment. This will often include taking a more holistic approach to energy systems planning or delivery within the EIZ (e.g., aligning with transport, spatial and economic planning). This should not preclude EIZs with similar objectives in different locations however, just as Enterprise Zones in different places can have the same objective and mechanisms.
4. ***Impactful.*** *Successful energy systems development within the EIZ will be nationally significant.* This means EIZs need to be of sufficient scale to support meaningful commercial deployments of new approaches (i.e., not just demonstrators). It also means the rules which apply will reflect a negotiated process between the proposed EIZ (i.e., the sponsoring public authority) and the national regulator. This will ensure all EIZs are effectively embedded within and recognise existing regulatory structures, although this doesn't preclude substantial defined 'flexes' and simplifications in regulations acceptable to both parties.

The 'Impactful' criterion implies that EIZs must create competitive local markets, be collaborative and that experiences and lessons are shared. Innovation and flexibility (including in regulations) are implicit in the

[4] This quote emphasises technological innovation, which is only part of the picture of course. The intention of EIZs and spirit of Commission discussions has always encompassed new business models such as those encouraging local balancing and other demand side activities such as energy efficiency. A whole systems approach is also at the heart of the EIZ philosophy.

[5] Although these might quite properly be influenced and constrained by wider national policy objectives and requirements, for example emissions reduction and fuel poverty targets.

'Distinctive' criterion (and may be made explicit as a national framework for EIZs is developed). Customer leadership includes local democratic accountability, transparency and independence.

Policymakers can potentially choose to stress or add specific (strategic national or local) requirements such as delivery of carbon targets; majority private (or foreign) investment; export and industrial strategy potential or social inclusion objectives on a case by case basis.

Box 2 identifies three broad categories of EIZ based on the experience of the West Midlands.

BOX 2. Categories of EIZs

The West Midlands has been developing pilot EIZs for over a year. This experience suggests that three broad categories of EIZ are emerging.

Type A. Infrastructure EIZ

In an Infrastructure EIZ, such as those developing in Solihull and the Black Country, the local authority is willing to take on some of the risk of energy infrastructure investment 'ahead of demand'. This approach should reduce network connection costs, support faster development of clean distributed energy systems and a more strategic and integrated approach to local economic planning.

Type A EIZs can potentially be created (with considerable difficulty) within existing market rules and in partnership with local network operators. However, efficient, fair and optimal outcomes would be facilitated by regulatory simplifications which recognise the value and role of local energy procurement and commissioning bodies (which would potentially also go beyond energy).

Type B. Services EIZ

In a Services EIZ, such as those being developed in Rugeley and across the region to deal with fuel poverty, local authorities are willing to take on some of the obligations of retail energy companies, particularly around energy efficiency and fuel poverty, in exchange for a share of the levies already included in domestic and/or commercial energy bills.

Again, Type B EIZs can in theory be created within existing rules, provided obligated suppliers are willing to co-operate (which usually comes at a price – unjustified by any economic theory or consumer interest, but understandable given the market power gifted to suppliers by the current schemes). However, once again more economically-efficient, fair and optimal outcomes would be facilitated by regulatory simplifications which allow agencies closest to customers to take primary responsibility for delivery.

Type C. Market-making EIZ

A Market-making EIZ is a type A or B EIZ combined with an open version of the existing Ofgem Sandbox and seeks to accelerate development of a particular market – such as for connected autonomous vehicles or hydrogen in Coventry and Birmingham – by also flexing identified market regulations which inhibit deployment of commercial solutions in a particular market area.

It is also worth noting at this point that traditional academic- or industry-led demonstration projects and living laboratories at any scale do not qualify as EIZs *on their own* because they don't meet the customer-led criteria. This is not to understate their value; it is simply to point out that these are very different things from an EIZ. Academic- and industry-led demonstrators are generally grant-funded directly by government

and industry (by UKRI in the UK). EIZs are intended to be largely market-funded through the energy system, although they should also create excellent contexts for traditional innovation and demonstration projects.

Historical context

The concept of special zones (i.e., offering regulatory flexibility in exchange for local risk and reward sharing) as a national policy instrument is not new. It originated in the late 1970s and early 1980s, most vividly as Special Economic Zones (SEZs) in China and in the UK as Enterprise Zones. It has been widely adopted worldwide since as an effective mechanism for enabling apparently contradictory political and economic ideologies to co-exist without destroying each other (e.g., in China) and also as a mechanism for minimising potential damage (or at least mitigating this locally) from substantial global shifts in economic structures[ii].

The concept has advocates of all political colours: promoted by Communists in China and neo-liberals in the UK in the 1980s (and widely across the US) the idea was adapted by the Labour Mayor of London in the early 2000s and most recently re-energised in the UK by the Coalition Government in 2012. This is probably because it offers a controllable (i.e., both risk-managed and directable) mechanism for accelerating and managing change. Elements of national institutional structures perceived as valuable, such as single party rule in China, or underlying cultural and political assumptions in the UK, are not threatened and can adapt at their own pace over time.

In this respect, it's important to recognise that EIZs are intended to focus purely on energy, and are neither therefore as ambitious nor as potentially controversial as Enterprise Zones or SEZs. The aspects of SEZs and Enterprise Zones of obvious value in the UK energy system today lie in enabling apparently contradictory guiding ideologies to coexist[6]; the ability of these Zones to offer controllable, risk-managed mechanisms for accelerating change; and the desire to avoid radical change to underlying national institutional structures - in this case a regulated approach supporting a competitive, privately-owned industry which would otherwise form a natural monopoly.

It is these aspects (and particularly the desire to accelerate change and thus create economic opportunities aligned to local competitive strengths) which underpinned the adoption of the EIZ concept by the Black Country and subsequent proposal from the West Midlands to include EIZs in their Devolution Deal.

The EIZ opportunity

While EIZs have much more limited objectives than Enterprise Zones, being focused on local energy systems and infrastructure[iii,7], they also offer particularly powerful and helpful benefits because of the nature of the current energy system transition (and indeed the nature of the energy system and its regulation itself).

Some of these additional benefits were highlighted in the King Commission Report[iv], but it's worth re-stating these and adding to them based on lessons since the Report was published:

[6] In the case of energy, the contradictory guiding ideologies are centralised management of the energy system and distributed control (rather than the communist and capitalist approaches to economics). [Some might also argue that EIZs create opportunities to reconcile social and profit motives in firms by requiring companies to demonstrate acceptable CSR policies, for example.]

[7] It's important to note that energy infrastructure accounts for around 60% of the unit cost of energy in the UK, and this percentage is rising.

- *Creation of a context in which a holistic, focused, responsive and democratically-accountable approach to energy infrastructure investment can be pursued. This will also maximise opportunities to secure private finance.*

  The energy system cannot be seen and planned in isolation from transport, economic development and spatial planning, and these linkages are becoming closer as markets for electric and hydrogen vehicles develop and clean growth becomes a priority.

  Private finance for energy systems investments is also readily available, but will seek out contexts with stable and clear political leadership[v].

  In distributed energy, where optimal economic and technical approaches are always location sensitive, achieving national consensus and stability on policy and technology preferences is both impossible and undesirable. This means private finance will be most efficiently (and thus cheaply) sourced by stable, credible and strong local political entities (either local authorities or regional authorities). An EIZ creates a framework and focus for this.

  Similarly, in transport, economic and spatial planning responsibility and competence is distributed reasonably sensibly between central government, regional and local authorities. In contrast, in energy systems planning and regulation is purely national, and local and regional authorities have negligible competence in this area. This mismatch significantly inhibits holistic, integrated approaches to distributed energy system development.

  An EIZ creates a context where there is an effective, democratically-accountable, properly-informed local public sector customer for long-term energy infrastructure investment. Strong customers in the right places are fundamental to markets operating efficiently and thus to effective delivery of national energy policy.

- *Recognition of the value of diversity of opinions and approaches in hedging risks and harnessing entrepreneurial ambitions at a time of uncertainty.*

  There is considerable competition in the energy sector between technical approaches and sometimes entire technology classes (e.g., hydrogen versus electric vehicles). The economics of these competing technologies is often strongly linked to infrastructure choices and regulatory structures, and yet all public policymakers are rightly aware of the risks in 'picking winners' and the desire to avoid this.

  The biggest risk to the national economy then arises from what is effectively passive picking of winners. This occurs when policymakers largely avoid strategic technology choices by simply sticking to the status quo. At best they approach change with extreme caution, typically at a pace which is comfortable to incumbents (rather than that might be dictated by competitive and open markets). Such an approach clearly favours the established players and means customers miss out on the benefits of genuine and open competition.

  EIZs are an opportunity to support a variety of diverse localised approaches at sufficient scale across the country. This will allow competitive markets to operate and select winners rather than policymakers. It will also encourage entrepreneurs to enter these markets at a meaningful scale and create platforms for them to challenge incumbents.

  Localities can in principle make sensible judgements about technology and infrastructure choices they want to support locally because they own the complex and inter-dependent system reality that is their 'Place'. They need energy today, tomorrow and into the long-term future. They are the key distributed energy system customer.

This is effectively a market-driven portfolio approach to hedging national risk[8]. The reality of competitive markets (actual customers and real, long-term demand in a holistic context) makes EIZs a better model for the commercialisation of energy system innovations than the standard peer-review approach to selection of project proposals which is generally used for early stage R&D, by Innovate UK and by Ofgem's Network Innovation Competition (NIC).

- *Creating opportunities to commercialise innovation in a market characterised by natural monopolies and dominated by long-term infrastructure costs.*

  The UK has a long-standing challenge arising from failure to connect academic and early-stage research with industrial exploitation (crudely, we are seen globally as excellent at coming up with new ideas and very poor at securing commercial benefits from these at any scale). This is particularly acute in the energy sector, where commercial outcomes are also heavily dependent on regulatory incentives and infrastructure choices, including in adjacent sectors such as housing, waste and transport.

  The scale and integrated nature of EIZs, which are essentially creating varied and competent strategic customers for energy systems innovation across the country, are an effective and helpful response to this challenge.

- *Making devolution real, and supporting existing local democratic institutions.*

  Metro mayors should have the basic power to designate EIZs, subject to the agreed criteria, which will always include Ofgem approval (i.e., to ensure the integrity and safety of the national energy system and protect customers); and local authority ownership and control, ensuring strong local engagement, accountability and reward.

- *Opportunities to develop more nuanced approaches to market regulation which recognise (and work with the grain of) potential structural changes in the industry and economy, particularly those associated with the shift towards clean growth.*

  To potential entrants, UK energy market regulation can appear impenetrable[vi]. However, this complexity is understandable in many ways given the variety of technical and commercial choices available in the sector, and in particular the need to protect domestic customers from exploitation.

  It's helpful, therefore, to look at a level of detail below the broad 'complexity' challenge, and to try to break down what the actual issues are. In practice, from the perspective of potential new market entrants there are probably two generic regulatory challenges: regulatory structure and regulatory relevance.

  The Structural challenge is that regulations are quite naturally structured in ways which reflect the existing industry ('market participants') rather than the structures which the innovative new businesses – potential new classes of market participants - may be seeking to establish[9]. Innovative clean, low carbon and distributed energy businesses which are inherently likely to be much smaller, more diverse and entrepreneurial than traditional energy businesses (and this should surely be encouraged in emerging markets) will feel this challenge most acutely.

[8] This is a different point from the earlier point about bounding and managing risks using EIZs (common to SEZs and EZs). Doing new things in defined areas which are small in relation to the whole country allows risk to the national system to be limited and managed. Encouraging diversity of approaches in different EIZs creates additional benefits from hedging risk.

[9] The recent issues with the Capacity Market, with a new demand-response aggregator (Tempus Energy) challenging regulations which they argued were designed assuming capacity could only be delivered by existing types of generators, is a good example.

The Relevance challenge is essentially that most regulations are irrelevant to many innovators, but it is very difficult to know which matter without considerable experience and engagement in the industry, which is typically not accessible or affordable for many potential new entrants. This means it's very difficult to build an investable and credible business case with the necessary confidence that nothing has been missed. Again, large established players can afford large regulatory affairs departments. Innovative new technology businesses with business plans showing them spending more money on regulatory affairs than product development will rarely be seen as attractive investments.

While Ofgem has made considerable progress in overcoming the second of these challenges in particular by offering more accessible and sympathetic support to new entrants and through models such as Sandboxes, EIZs will provide a much more focused and efficient way of doing this.

The reality of a specific business proposition in a tangible place makes the job of focusing everyone on the relevant regulations much easier, and EIZs also create scope for experimenting with flexing regulations to support new industry structures and classes of market participant locally without risking disruption to national systems. The distinction to Ofgem's existing Sandboxes lies in the EIZ being customer- rather than supplier-led (and hence open to competitive entry rather than the closed province of a sponsoring supplier).

The role of the regulator

EIZs are not intended to challenge the critical necessity and role of the regulator, Ofgem, in the UK energy market. The role and approach of the regulator and how this might change in relation to EIZs does deserve special consideration, however, because it is so fundamental.

The principle of managing the UK (and other national energy markets) through a combination of privately owned and managed companies and a regulator (coexisting with some local supervision in some other countries[vii]) who is independent of but accountable to government has been well-established for several decades. In the UK most evidence seems to suggests that this is a more effective model than either direct management of the energy sector by the state[10] or an unregulated private sector model (which would almost certainly lead to customer exploitation through abuse of natural monopolies).

However, the existing model has clear weaknesses[viii] characterised by fragmentation, a piecemeal approach, narrow stakeholder engagement and a degree of economic idealism[11] which hides (often unhelpful) structural assumptions. Many of these weaknesses (e.g., continued fragmentation and piecemeal responses which add to overall complexity) reflect institutionalised relationships (e.g., between

[10] The UK public service culture appears particularly poorly suited to direct management of nationalised industries. It was noticeable that even the current leadership of the Labour Party stopped short of calling for re-nationalisation of the energy sector, although they were not so coy in other areas.

[11] In the long run, all will be well and all is fair in a perfectly competitive, perfectly well-informed market. But in the short-term incumbents will always seek to profit from customer ignorance and market power (where this is created by market structures) and new entrants will face entry costs and structural barriers. Arguments with Ofgem tend to follow a path of the challenger asserting a costly barrier and Ofgem replying that it doesn't really exist because demand or supply or innovative new business models can be aggregated (i.e., so they look like incumbents) new entities and structures created, competition will eliminate excess profits (etc) all within the existing rules (which are expanding all the time and only they really know). The real issue is not what is within the rules or not, but how easy it is and should be to engage in the market and how to continuously re-structure the rules to reflect customer interests and changing policy objectives. Market boundaries are also significant, and Ofgem's definition of the energy market may not align very well with how customers think.

Government and Ofgem, and Ofgem and market participants)[ix] which are not the fault of any one party but are the consequence of overall system design[12].

In the end there is no such thing as a completely open and neutral marketplace – to use a physical analogy, if a traditional food market is established in a particular town, suppliers already based in that town and farmers based nearby have an advantage, just as incumbent energy companies by and large have an inbuilt advantage in the UK energy market. This costs and benefits of this advantage need to be recognised and discussed in relation to the distributed energy sector, not dismissed or ignored.

EIZs create a mechanism for making some of these costs and benefits more visible and tangible - relating them to real customer demands and needs (expressed broadly, both as immediate demand for heat and power and long-term need for cost-effective, clean infrastructure). They also create an opportunity to experiment with new, potentially better and more flexible, regulatory structures, such as the US Public Utility Commission model[x] or Regional Energy Infrastructure Commissioning Bodies.

In essence, some form of economic regulation is a given, and nothing in this paper is an argument for less regulation – simply better regulation, structured to meet the needs of a changed and changing market. The core issue is structuring (and potentially distributing) the regulator most appropriately to meet the needs of an increasingly distributed, infrastructure-heavy, energy sector (and an energy sector which is increasingly overlapping with digital, housing and transport sectors).

Challenges

EIZs clearly imply changes in the respective roles of government, regulator and local authorities in relation to the energy sector.

Local authorities will need to be willing to take on more responsibility and risk, and to be more accountable to their voters for local energy infrastructure choices and outcomes. They need to be properly resourced to do this, although there is absolutely no reason why this should not be funded from energy bills in common with the rest of UK energy market governance. Implicit in the whole case for EIZs (and wider regulatory reform) is the proposition that the more effectively regulated and managed clean and distributed energy system that they will pioneer will generate net economic benefit for the UK as a whole.

There will also be failures (just as energy companies fail). Government and the national regulator need to shift their focus to act as facilitators and risk managers; concentrating on policing EIZ boundaries and good governance and ensuring intervention of last-resort exists at national level. Seeking to control and monitor activities in detail will never be efficient in a system which clearly needs to become increasingly fragmented, distributed and responsive to deliver the most cost-effective, clean outcomes to customers.

Finally, we need to recognise that this is all about finding and managing a low risk approach to change (just as Chinese SEZs were a low risk approach to change there) and to adjustment within a regulatory system that has many virtues as well as serious challenges. Managing national risk has a cost: it's about making this cost as low as possible without holding back economic growth and opportunity. The only certainty is that managed evolution is almost certainly cheaper than either sudden revolution or holding on to an obsolete system in a changing world.

This means that investing in a staged approach and proper resourcing of effective 'place-led' pilots, ideally involving as broad a collaboration of national partners as possible, will be critical. These pilots need to be approached with an open mind, appropriate levels of ambition, and in particular a willingness to listen to

[12] This system design pre-dates either policies targeting clean growth or the economics of distributed energy systems becoming viable.

what localities actually want – for example, following the approach of the pilot EIZs developing in the West Midlands.

Next steps

Pilot EIZs, devolved and local authorities need an Ofgem- and BEIS-approved, robust template confirming:

- What the costs, risks, rewards and benefits of establishing an EIZ are;
- What the process is to develop and secure approval for an EIZ;
- Acceptable governance mechanisms which balance local accountability and engagement with national risk management;
- How EIZs will be monitored and by whom;
- What resources will be available to support them and where;
- How value capture mechanisms will operate and what the options are;
- 'Last resort' measures and powers of regions and central government;
- How long EIZs can operate for, and how they will be re-integrated into the wider system;

Distinguishing between Infrastructure, Services and Market-making EIZs (Type A, B and C) creates a simple framework for an initial project to define answers to these questions for each type of EIZ[13]. The work already done in the West Midlands and the strong political support for this activity there makes the WMCA the ideal focus for such a project.

Because time is of the essence and energy market regulations are complex and in some cases enshrined in primary legislation, the brief for the project should also require answers to be provided assuming two distinct stages of regulatory and legal development:

I. Interim EIZs which could be implemented now, working within existing market regulations and structures (including Sandboxes). This might in many cases reduce to focused packages of regulatory and technical support and off-the-shelf legal and contractual templates available to local authorities who want to invest in infrastructure ahead of demand (for example).
II. Full EIZs supported by changes to primary legislation and significant energy market regulatory changes (simplifications). These might, for example, create local utility commissioning bodies and recognise local authorities (i.e., local strategic planning bodies) as important energy market participants (customers). They might also allow local authorities to manage energy company obligation funding directly, without being required to involve suppliers, etc.

This approach also recognises that the issues are not typically about regulations *preventing* new approaches per se, but more about regulations making economic activity in the UK energy market more or less easy for different types of participant. In this sense Stage I is about how we create environments in which new market participants (local authorities and innovators) are helped to shape themselves to look like the existing market participants for whom the current regulations are designed; Stage II is about re-shaping the regulations themselves to work more efficiently for these new participants.

The project should identify the anticipated benefits to customers and market participants of a stage II approach versus a stage I approach to each type of EIZ.

[i] https://es.catapult.org.uk/wp-content/uploads/2018/03/powering-west-midlands-growth-regional-energy-policy-commission-report-2018.pdf

[13] Such a project should include multiple pilot EIZs to act as worked examples and test cases; Ofgem, BEIS, probably MHCLG, energy network operators and the Energy Systems Catapult.

[ii] Wetherall, S. Freedom Planned: Enterprise Zones and Urban Non-Planning in Post-War Britain. *Twentieth Century British History, Volume 27, Issue 2, 1 June 2016, Pages 266–289.*https://doi.org/10.1093/tcbh/hww004
[iii] Cost of Energy Review, BEIS (2017)
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/654902/Cost_of_Energy_Review.pdf
[iv] https://es.catapult.org.uk/wp-content/uploads/2018/03/powering-west-midlands-growth-regional-energy-policy-commission-report-2018.pdf
[v] University of Surrey, 2018. https://www.cecan.ac.uk/sites/default/files/2018-01/Henry%20Leveson%20Gower%20Report.pdf
[vi] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/504797/bis-16-158-crt-review-energy.pdf
[vii] http://projects.exeter.ac.uk/igov/lessons-from-america-if-only-the-gema-was-more-like-a-us-public-utility-commission/
[viii] For an excellent discussion, see Mitchell, C (2018). http://projects.exeter.ac.uk/igov/new-thinking-ofgem-has-to-be-reformed-if-gb-is-to-meet-its-energy-policy-goals/
[ix] Ibid.
[x] http://projects.exeter.ac.uk/igov/lessons-from-america-if-only-the-gema-was-more-like-a-us-public-utility-commission/