

Emergence and control in UK energy democratisation

In Search of 'Good' Energy Policy
University of Cambridge, 26th Feb 2019

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Outline

1. Summary of component parts and definitions
2. Emergence of the 'Four Ds'/D4 concept
3. Co-evolution and additionality
4. D4 as a guiding heuristic for the pursuit of 'good' energy policy

D1 & D2: Decarbonisation & decentralisation

Decarbonisation...

- Electrification of heat and transport, and decarbonisation of power
- Increasing reliance on wind and solar as new physical components of energy system
- Intermittency as the 'new normal'

Decentralisation...

- Shift in geography from 'strategic' to combination of resource- and load-centric siting of generation assets
- Lots of innovation at the 'grid-edge'
- But UK Gov favouring large-scale centralised infrastructure

The scope, scale and speed of these transitions still extremely uncertain

D3: Digitalisation

- Increasingly representing energy flows as digits/bits at a far more granular scale as had been done previously
- Moving from load-following to managing fluctuations in both supply and demand to unlock flexibility
- An enabling ecosystem of innovations
 - Pushing decarbonisation and decentralisation ever further
 - Generation of data as new form of capital / infrastructure
- Blurring the boundaries of the energy system (Judson 2018)

D4: Democratisation (1)

- The new nature, scale, and geography of renewable energy sources means that people are involved far more than they have previously been

Most contested of all four D4 trends...energy democracy as:

- A conceptual frame for climate action (Szulecki 2018)
- “something to fight for as the path to a better quality of life with stronger communities and better personal relationships” (Morris & Jungjohann 2016)
- Not a future utopia to be won, but rather “an ongoing series of multiple struggles over who owns and controls energy and how, where and for whom energy is produced and consumed (Angel 2016)
- Conceptualised across multiple dimensions, e.g. Popular sovereignty, participatory governance, civic ownership (Szulecki 2018)

D4: Democratisation (2)

- Normative dimensions of energy democracy are somewhat dominant
 - i.e. Removing energy from a ‘moral vacuum’ (Sovacool & Dworkin 2015)
- There is also however pragmatic rationale for citizen involvement
 - Local knowledge/nuance (Fischer 2000)
 - Participation increased the quality of governance (McCormick 2011)
 - Deep decarbonisation requires ‘deep democratisation’ (Soutar 2018)
- Most often only referring to electricity – rather than energy more broadly

The Three Ds of Labour's energy policy (2015-2017)

Aug/Sept 2015

Labour under Corbyn seeks to 'democratise, rather than nationalise' the UK energy market (Nandy, Sep 2015)

Feb 2017

Alan Whitehead speech highlights that future direction of energy can be summed up by 3Ds (Decarbonisation, Decentralisation, Democratisation)...and that we "need to regulate urgently to stay on the path" to smart, flexible energy systems (Feb 2017)

Adoption of the D3 slogan by industry actors (2017...)

Early 2017: Industry commentators embrace D3 (decarbonisation, decentralisation and digitalisation) as a guiding concept

- “Charting a safe course requires understanding each of the three Ds” (Energy Storage News, April 2017)
- Future is “exciting and full of opportunities”, but hold “major threats for those who don’t take the changes seriously” (Engie, June 2017)
- “Interlinked, these concepts...provide the crux of today’s challenges” (PowerGen Europe, 2017)
- “companies will have to show a willingness and flexibility to adopt new business models, as well as an openness to embrace new partnerships” (Eurelectric, June 2018)

From D3 to D4 (2017-2018)...

2017 onwards: Democratisation integrated into D3

- “As digitisation, democratisation and decentralisation come together the production cost drops to make the shift towards renewables unstoppable. The days of clean tech being the costly but moral choice are over.” (Forum for the Future, Oct 2017)
- Multiple ways (and business opportunities) among the 4Ds (Louise Kingham, Energy Institute, Nov 2017)
- Multiple other Ds being used
 - Deregulation, Disruption, Decreasing consumption...

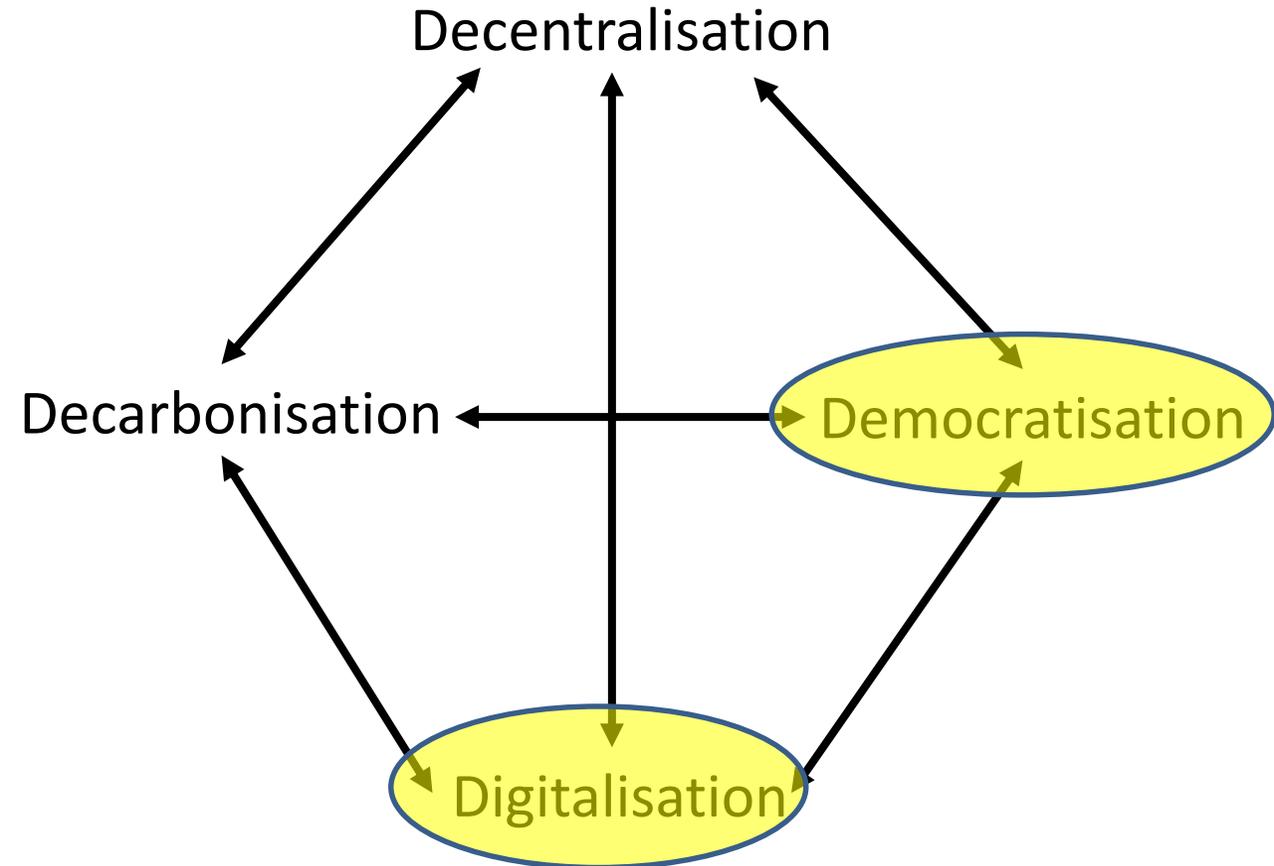
D3/4 seems to have found some resonance as a guiding heuristic among a suite of policy, industry and civil society actors, all searching to make sense of energy system change

But...

In what ways does D4 offer the potential for a paradigm change in relation to the pursuit of 'good' energy policy?

Additionality

- Four trends are co-evolutionary, i.e. changes along one trend will affect all others
- E.g. digital innovation around flexibility driven by intermittent, geographically dispersed assets ...and in turn driving deeper penetration of RE tech
- E.g. Local, low carbon tech offering potential for new roles and responsibilities by citizens ...and in turn supporting further adoption



Necessarily broad / realistically complex

- Energy relates to a broad set of public interest issues, so as a starting point, 'energy policy' should be directed towards these
- A D4 framing illustrates the true complexity of energy policy
 - Working towards system-wide outcomes in the public interest cannot be done by working on each component in isolation
 - E.g. Each aspect is necessary but insufficient for deep decarbonisation
- Understanding the unruly dynamics between the multiplicity of components, and outcomes thereof, is central to understanding energy systems as a whole



Sustainability First New PIN
Public Interest Dashboard

More moving parts...more emergent outcomes?

- Energy system outcomes result from aggregate behaviour of individuals, and in a D4 world, actors and their behaviours are becoming more diverse
- D4 highlights the necessity of attending to a wider range of actors, who are interacting with new technologies and developing a richer diverse set of roles and responsibilities for these actors, within energy systems
- Public interest issues around energy will be increasingly revealed, and increasingly important as people become more connected with energy system as it matures



Challenging the established principles of control

- Taken together, the four Ds are challenging established principles (i.e. what, who, how) of control
 - Move from Strategic investment to responding to that of others at the grid edge
 - Rethinking optimisation, from predict and provide to flex and respond
- Need to open up discussion around efficacy and ethics of control at the 'grid edge'.
 - E.g. at what scale is a fully digitalised energy system best optimised? Who gains/cedes control, and what does this mean for the public interest?
- Questions around whether existing institutions are fit for purpose
 - or whether entirely new institutions are required?
- Democracy is dependent on effective institutions...the potential value of energy democracy will similarly need to be underpinned by effective institutional structures

Principles for operating within a new D4 paradigm

In general, governing for energy system complexity will require

- Humility in terms of attitudes towards ‘control’
 - Understanding that the mechanics behind the policy levers are not simple
- Adaptability
 - Continual reflection on whether existing institutions are fit for purpose in light of emergent public interest issues, and/or whether new institutional arrangements are needed
- More strategic coordination among system actors
 - to ensure that ‘messy’ progress across D4 do not conflict with progress towards system-wide outcomes, such as meeting carbon budgets

In summary...

1. D4 has emerged as a guiding heuristic of change in the UK energy system
2. Lack of academic foundations, but perhaps more attentive to the messy, uncontrollable, ultimately political and deliberatively ambiguous nature of energy policy and innovation
3. Potentially offers a new paradigm for understanding key forces and dynamics energy transition and transformation
4. Getting better in terms of a) humility, b) adaptation and c) coordination will be important if we are to progress with each of the four Ds while also addressing our (evolving) public interest objectives

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