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IET Data Centre Supplement:

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Data centres in the UK are not overseen by a formal Regulatory body like those that govern water, electricity and telecoms. This is largely because data centres aren't consumer facing and because there is a fully functional and highly competitive commercial market irrespective of the service or business model. However, for a supposedly "unregulated" sector, data centres are surprisingly heavily burdened with legislative requirements.

Regulatory compliance is a major operational concern for operators: just keeping abreast of the constant influx of new instruments and the expanding scope of existing ones is challenging enough, and the compliance burden is exceptionally heavy. So this leaves us with two questions: firstly, why do we need so much policy and regulation in the first place? and secondly, why do so many different regulatory instruments apply to data centres?

The first is easy to answer. One might ask, when a market works effectively, why we need policy intervention. The answer is that the market might work well for its participants (suppliers and customers) but most commercial markets generate externalities. An externality is a negative effect or cost imposed on a third party that the market itself cannot correct. This is called market failure. Pollution is a classic externality: a by-product of economic activity that is imposed on everyone.

We need policy to intervene and correct market failure. The choice is usually between "command and control" measures (regulations stating what must or must not be done), or "economic instruments" (taxes, levies, fees or tariffs that impose penalties for polluting or incentivise good behaviour). Economic instruments like carbon taxes are often called "polluter pays": the more you emit, the more you pay.

The second question is trickier: why do so many instruments apply to data centres? There are several reasons. The complexity of the environment is one: a data centre is where multiple technical sectors and disciplines converge: communications, construction, engineering, IT hardware, security, date, etc. So a data centre is obliged under all the regulations that apply to any one of its constituent parts.

Data centres are also energy intensive, so they tend to exceed entry thresholds for carbon and energy reporting and taxation schemes, like the (now fortunately abolished) Carbon Reduction Commitment. On the plus side, the sector also qualifies for a Climate Change Agreement (which provides energy tax concessions in return for efficiency improvements) on the basis of its energy intensity.

Then the sector has some very unusual (unique in fact) characteristics that place facilities in the firing line of regulations that were clearly not intended for them. The EU Emissions Trading Scheme (EU ETS) is one, and the Industrial Emissions Directive (IED) is another. Both are aimed at large combustion plants operating continuously. Data centres have significant installed emergency generating capacity that is rarely used, but because the threshold for obligation under both instruments is related to capacity rather than activity, many UK operators are burdened with some very onerous and costly requirements, which again deliver no, or negligible, policy outcomes.

Finally, the sector is relatively new: data centres tend to be recent additions to our urban landscape, often hidden in obscure corners of business parks or regenerated industrial sites. Most people are unaware that they exist and as a result their presence has escaped the attention of many policymakers.

One might assume this would lead to under-regulation but the opposite is true: a number of policy instruments, designed without data centres in mind, have captured them inadvertently. The Heat Networks Metering and Billing Regulation is a perfect example. Sensibly targeted at addressing the split incentives between landlord and tenant it requires landlords to meter the heat and cooling they provide and attribute charges according to consumption. Applied to a cooling system in a multi tenanted data centre this regulation has horrible repercussions, not just in terms of infrastructure but also on contractual arrangements. Fortunately the issuing Department, BEIS (Business Energy and Industrial Strategy), recognised that it would deliver no policy outcomes and took a pragmatic view.

It's worth having a quick look at some of the most familiar policy instruments relevant to data centres. We can group these into three categories:

1. Requirements specifically targeted at data centres: this is a short section because there are none. The only policy instrument targeted directly at data centres is a set of Green Public Procurement criteria, but these are voluntary and not yet finalised.

2. Generic instruments where data centres are clearly in scope: These range from GDPR (General Data Protection Regulation) to Gasoil Tank Regulations. We include instruments like NIS (Network and Information Security Directive) EBA (European Banking Guidelines), MCPD (Medium Combustion Plant Directive), EcoDesign (Lot9 for Servers), ESOS (Energy Savings Opportunities Scheme), MEES (Minimum Energy Efficiency Standard) and SCER (Streamlined Energy and Carbon Reporting).

Figure 1. Mostly Harmless: Oil tank regulations – sensible, simple and effective

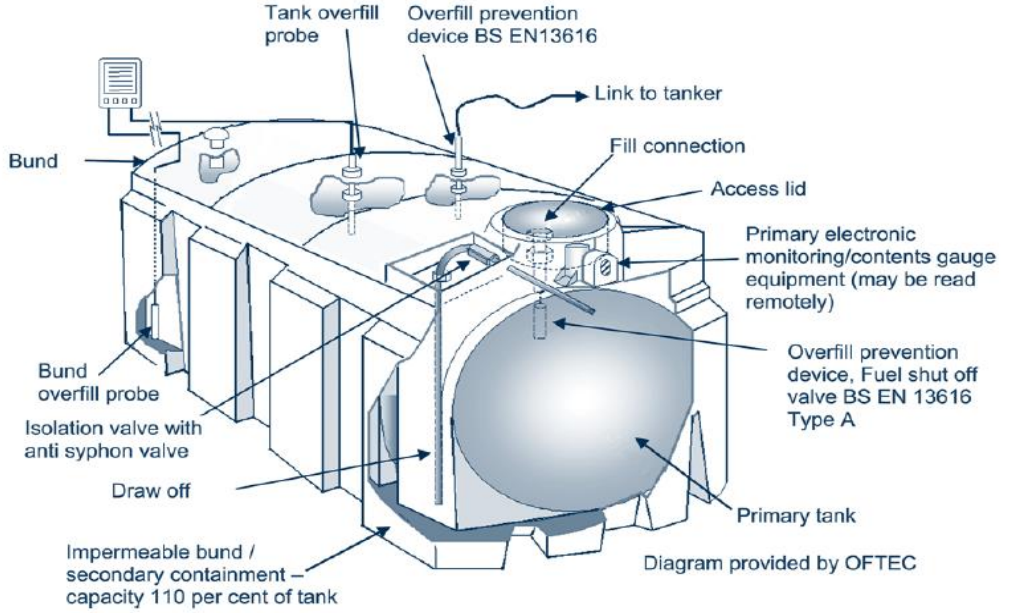


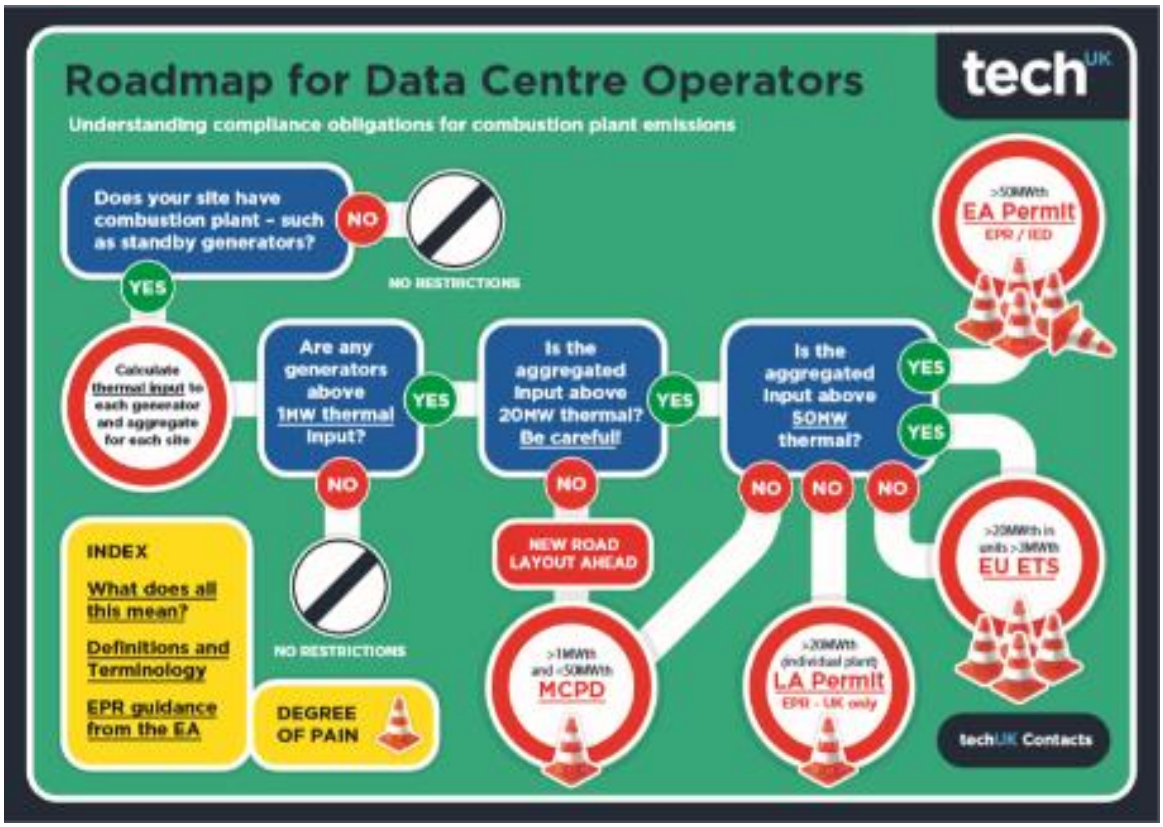
Figure 2. Example of integrally bunded tank (could be constructed of metal or polyethylene and may not be this shape and design)

3. Instruments where data centres are not the primary target but are included inadvertently due to a quirk of policy wording, misunderstanding sector characteristics, or sector growth. These include EU ETS (targeted at large combustion plants), IED (targeted at even larger combustion plants), Specified Generator Controls (targeted specifically at diesel farms) and Heat Networks (targeted at tenanted buildings and campuses).

Compliance with regulatory requirements is not optional, even if they deliver no positive benefit or are obviously inappropriate. Operators must therefore divert significant resource to compliance, to the extent that the process itself gobbles up budget that would otherwise be dedicated to doing the right thing.

techUK plays a positive role here, by lobbying for change where instruments are clearly unfit for purpose, and has had success with Heat Networks and EU ETS. We also try to mitigate impacts and reduce burdens, by negotiating streamlined compliance processes or producing guidance material. A Compliance Healthcheck[i] lists the most common instruments, and briefings on EU ETS, IED[ii], GDPR[iii], MCPD[iv], SGC and Heat Networks[v], plus more generic pieces on generator emissions[vi], explain the basics.

Figure 2: Explaining Generator Compliance: Cones of Pain

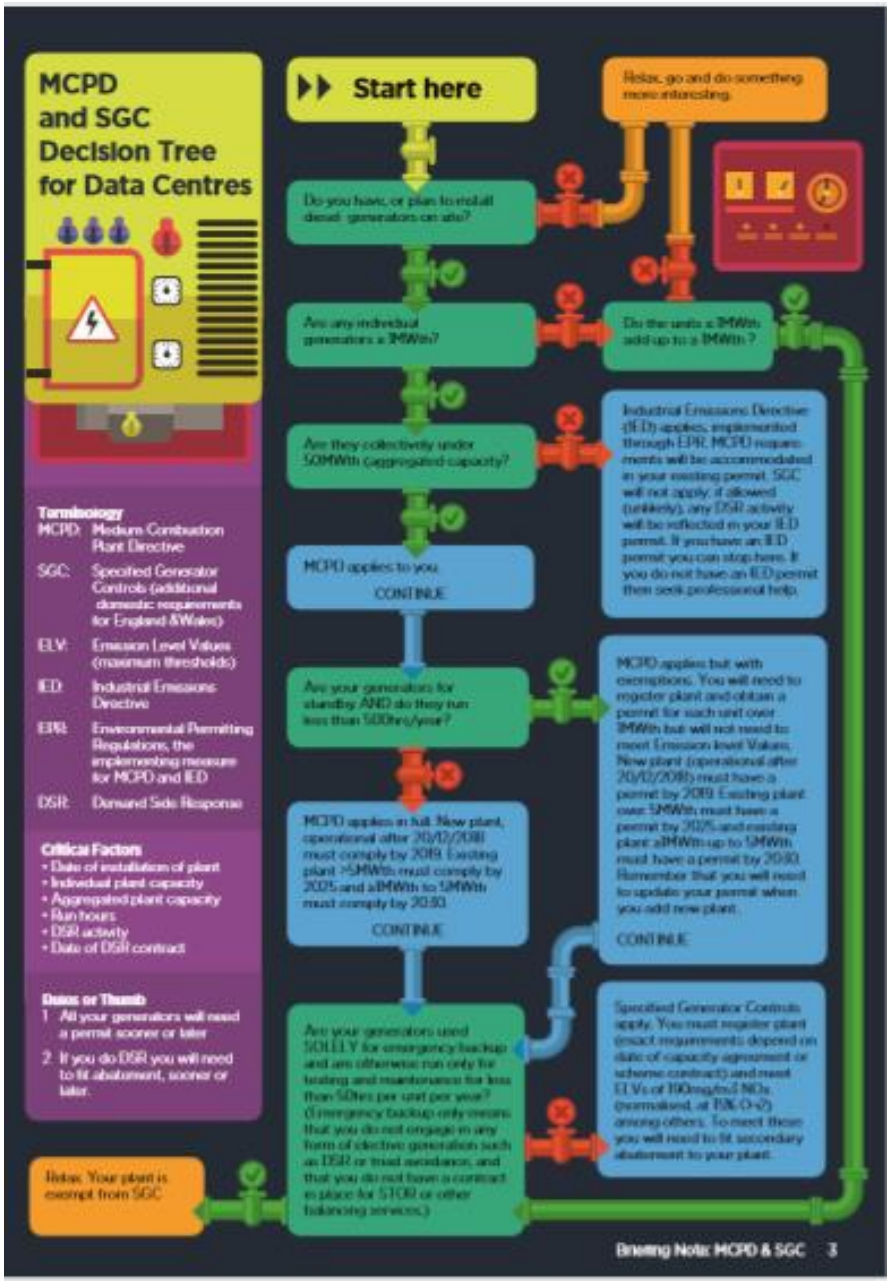


Although legislation is well intentioned, anyone spending much time at the receiving end of the UK's policy machine will soon detect shortcomings in the process. Most issues are systematic. Many result from failure to understand the policy targets adequately: how the technologies and markets actually work. This is exacerbated by continual rotation of staff within the civil service. The long-

accepted theory that a government official can rapidly develop the necessary understanding to administer any policy area is misplaced. It may have been true for Samuel Pepys, but nearly four centuries later things have moved on, and departments need to build up the necessary technical expertise.

Institutional amnesia also plays its part; as new teams take over they may be unaware of original policy intentions. Policies are also vulnerable to political agendas. The CCA is an example: BEIS now focuses purely on the efficiency outcomes the scheme's contribution to our carbon budgets, but the original intention was to protect energy intensive sectors subject to overseas competition from high energy costs.

Figure 3: MCPD: Bells and Whistles



Other defects include a temptation to narrow the field in consultations (or limit the alternatives) so that questions lead to pre-defined answers. Impact assessment is often inadequate, failing to identify the true cost of compliance for businesses: ESOS compliance costs were predicted to be a few hundred pounds, some way short of the tens of thousands that companies are actually setting aside for this one requirement.

The UK also has a particularly bad track record in gold plating legislation coming from the EU, which is true of both ESOS (higher standards) and MCPD (additional requirements).

There also seems to be a general reluctance to make use of existing instruments, and instead add new ones.

The UK has more individual pieces of climate related legislation than any other country and the complexity, duplication and resultant cost to business are not achievements that Government should be proud of.

Figure 4: list of policy instruments plus burden imposed compared to outcome delivered.

Policy Instrument	Burden	Outcome
EBA Guidelines on outsourcing arrangements		
EcoDesign Directive - LOT9 for Servers		
EED - Energy Efficiency Directive Art 8 / ESOS		
ETS - EU Emissions Trading Scheme:		
Gasoil Storage Tank Regulations		
GPP - Green Public Procurement for data centres		
GDPR - General Data Protection Regulation.		
Heat Network (Metering and Billing) Reg		
IED – Industrial Emissions Directive (EPR)		
MCPD - Medium Combustion Plant Directive		
SGC - Specified Generator Controls		
MEES - Minimum Energy Efficiency Standard		
NIS - Network and Information Security Directive		
SECR: Streamlined Energy and Carbon Reporting		

Key:

- Low burden / Good policy outcome
- Moderate burden / Moderate policy outcome
- Variable or uncertain burden / Poor or uncertain policy outcome
- High burden / Zero, negligible or negative policy outcome

In conclusion, the data centre sector welcomes ambitious requirements relating to corporate governance, operational performance and sustainability. In principle, these help level playing fields, sweep up laggards and contribute to social good. Robust policymaking is not easy, however, and the result often diverges from the original intention. In such cases government is far too slow to accept mistakes and implement corrective actions.

Regulation plays a critical role in the way that technology develops and how markets are shaped. Policy can determine whether a business flourishes or fails. It is therefore essential that it is properly informed. We welcome growing recognition of the infrastructural and economic role of data centres among policy makers and accept that this will go hand in hand with greater scrutiny. Our intention is not to resist policy instruments *per se* but to work with stakeholders to ensure that those instruments, whether mandatory or voluntary, are only applied when necessary, that they build on existing approaches rather than creating new ones, and that they are fit for purpose. By this we mean that the implementation reflects the policy intention and does not lead to unintended consequences like perverse incentives, market distortion or carbon leakage. Unfortunately, such a scenario is still some distance away.

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[i] Compliance Healthcheck for data centres: https://www.techuk.org/insights/news/item/11707-data-centre-compliance-health-check-november-2017

[ii] IED Guidance: https://www.techuk.org/images/IED_IN_or_OUT_V05.pdf and Guidance on navigating the IED compliance process

[iii] Guidance for data centres on GDPR: https://www.techuk.org/insights/news/item/12106-gdpr-for-data-centres

[iv] Briefing note on the implications of the Medium Combustion Plant Directive and Specified Generator Controls on data centres.

[v] Briefing on Heat Networks: https://www.techuk.org/insights/news/item/13170-briefing-note-on-heat-network-regulation-for-data-centres

[vi] Cones of Pain: https://www.techuk.org/images/generator_emissions_roadmap_FINAL.pdf and Nitrous Oxides: https://www.techuk.org/insights/meeting-notes/item/15083-nox-implications-for-data-centre-operators