

Briefing document

# Corporate Procurement of Renewable Energy: Implications and Considerations

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# Introduction

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Increasingly, the private sector is procuring renewable electricity as they seek to reduce their emissions in pursuit of Net Zero strategies and targets. This is done primarily through Power Purchase Agreements (specific contracts signed between energy generators and corporations) as well as green tariffs (a renewables-only tariff provided by a company's energy supplier). Driving this action is the understanding that the company will be reducing its own emissions as well as contributing to national or global emissions reductions in order to combat climate change. Many Local Authorities and consumers are pursuing similar approaches, and looking to procure renewable electricity as they seek to reduce their own carbon footprints and contribute to wider systemic changes.

However, in most cases within the UK, this procurement of renewable electricity is having a limited impact, and in many cases, no impact at all on emissions reductions either for the company or for the country. There are two reasons for this:

- Most forms of procurement do not actually lead to increased renewable electricity generation within the wider UK system (considered as 'additionality'), as the majority of renewable electricity being purchased either already exists or is being supported through Government mechanisms including Contracts for Difference;
- Most forms of procurement do not lead to renewable electricity generating the actual power that is consumed by the corporation; meaning, in most cases the electrons flowing into the company's buildings and operations are comprised of a mix of fossil fuel generated electrons and renewable electricity generated electrons that are representative of the grid to which the company is connected.

This matters for several reasons. First, many companies - consumers and local authorities – believe their actions are having a wider impact, and this confusion caused by a lack of transparency could impact upon trust and motivation for taking action against climate change within the UK if entities increasingly believe their actions will have no or limited impact. Second, there is a potentially missed opportunity for the UK Government to leverage corporate ambition to tackle climate change and ensure that this ambition actually supports the achievement of the UK Government's legally binding Net Zero target. Third, widespread use of the accounting protocols which specify that matching a corporation's electricity consumption with an equivalent amount of renewable electricity procured can be accounted as 'Net Zero emissions' could actually be disincentivising the actions which could best support decarbonisation of electricity generation.

The CCC believes that a better understanding of these issues will be critical as the Government seeks to create an electricity system and a wider mobilisation of society to enable the achievement of Net Zero by 2050. It recommends that the Government undertake a review of the role of renewable procurement and associated mechanisms in light of the Net Zero target. Understanding the drivers behind corporate procurement, the characteristics of the different options for procurement, the impact of the REGO system on procurement choice, and the important role of stable generation and flexibility in decarbonisation can all help to inform the scope of any review of a future market system and the key principles to which it should adhere.

# 1. Corporate procurement of renewables

The drivers underlying the corporate procurement of renewables are significant, and are increasing the scale of corporate procurement undertaken in the UK. In addition, the interest in pursuing additionality in procurement – or having a wider systemic impact – is affecting not only the amount but also on the type of procurement being pursued by the private sector.

## The current and potential scale of corporate procurement of renewables

In 2019, 81% of FTSE 100 Companies have set emissions reduction targets,<sup>1,2</sup> and across all companies in the UK, approximately 36% say they now have or are currently planning a strategy to reach Net Zero emissions.<sup>3</sup> As part of these commitments, companies are increasingly turning to procurement or generation of renewable electricity. In fact, 77% of FTSE 100 companies are now purchasing electricity from renewable sources or generating renewables on-site, up from 74% in 2018 and 65% in 2017, and the proportion of companies procuring electricity is increasing as the proportion of companies generating renewables is declining.<sup>4</sup> Across companies in the UK which have set a carbon reduction strategy, 39% indicate they are procuring renewable energy – the fourth most popular activity within a carbon reduction strategy.<sup>5</sup> The drivers for more and more ambitious corporate action are significant, and more detail can be found in the accompanying report *The role of business in delivering the UK's Net Zero ambition*.<sup>6</sup>

Translating these practices to actual electricity consumption from private sector renewables procurement is challenging, as precise numbers are not tracked within the UK. However, some available data can demonstrate the possible current and future scale of corporate procurement, as well as procurement by Local Authorities and purchasing decisions by consumers.

For context, electricity demand in the UK in 2020 is around 300 TWh (terawatt hours). It is possible to assess the sources of electricity consumption by sector, and this is approximately equally divided between residential buildings, non-residential buildings, and Industry (such as manufacturing) and with a small proportion from agriculture and rail. Procurement decisions by the private sector could influence potentially a high proportion of these TWh, assuming that they are responsible for electricity consumption in a significant proportion of non-residential buildings and in industry. Under the CCC's Balanced Pathway, electricity demand overall increases by around 50% by 2035, and by around 100% by 2050, with still a high proportion of demand coming from the private sector. The role of consumers and local authorities in making renewable electricity choices could also be significant, potentially impacting upon demand in residential buildings, as well as non-residential buildings by local authorities. The procurement decisions of the private sector, consumers, and local authorities combined could impact well over 90% of the UK's electricity consumption in the near future.

While the above figures represent the potential, it is actually much harder to estimate the current impact of independent procurement as limited data exists. In 2020, the composition of renewables within the UK system is approximately 110 TWh, or 36% of overall supply and this must increase to 80% by 2050 (in the Balanced Pathway) in order to reach the UK's Net Zero target. The potential impact of private sector decisions on corporate renewables could be significant in helping to achieve this shift.

For example, Tesco and BT each alone consume nearly 1% of total UK electricity, and each have reached now 100% renewables within the UK. The RE100, a group of companies around the world committed to 100% renewables including Tesco and BT, now contributes 3% of total UK electricity consumption.<sup>7</sup>

Furthermore, consumer demand is also adding to this total demand – at the start of 2020, 37% of the domestic market was supplied by a 100% renewable electricity supplier, an increase from 5% in 2018.<sup>8</sup> Electricity consumption comprises a significant proportion of a local authority's carbon emissions, with figures from 5 local authorities in the UK showing it can range from 5% to 63%,<sup>9</sup> and many local authorities are choosing to procure 100% renewables. The demand from independent entities seeking to procure and purchase renewables is significant and growing.

## Carbon accounting

The private sector is increasingly driven to procure renewable electricity as they set ambitious Net Zero targets and strategies. As part of these strategies, they follow standardised carbon accounting methodologies which – along with other drivers – inform the type of corporate action undertaken to reduce emissions.

The most widely used methodology informing private sector emissions accounting – and subsequent emissions reduction reductions and strategies – is the Corporate Standard of the Greenhouse Gas Emissions Protocol.<sup>10</sup>

This Protocol governs how to account for Scope 1, 2 and 3 corporate emissions (essentially direct and indirect emissions – for more information refer to accompanying report on *The role of business in delivering the UK's Net Zero ambition*). For Scope 2 emissions – which covers a company's electricity consumption – it offers two different accounting methods from which a company can choose.

One is the market-based approach, specifying that any type of contractual agreement which ensures that the reporting company pays for the same amount of renewable electricity as the company uses in a given year can be used to attribute its electricity emissions to Net Zero.<sup>11</sup> This approach is most commonly used, driving many companies to procure corporate renewables to reduce their Scope 2 emissions significantly and even reach Net Zero.

The alternative method presented by the Protocol is the location-based approach, which specifies that accounting must reflect the average emissions intensity of electricity grids on which energy consumption occurs (using mostly grid-average emission factor data).

There are two key challenges in applying these accounting methods:

- Using the location-based method currently leaves limited ability to achieve Net Zero electricity consumption. Unless a company draws its electricity from a fully decarbonised central grid, from on-site renewable generation, or via a nearby source which physically connects the renewable electricity directly to the source of consumption, it cannot claim to be Net Zero in its Scope 2 emissions. A fully decarbonised electricity grid does not currently exist in the UK and entirely on-site generation is very challenging for most companies to achieve.

- Using the market-based method does not guarantee that a company is actually reducing emissions within the wider system even if it is procuring 100% renewables, as this will depend on the overall structure of the electricity market in which it operates. The market-based method does not specify that new renewable generation needs to occur as a result of the procurement contract, and therefore emissions reduction will only occur if the procurement method chosen specifies new generation or it is linked to a wider electricity market system where procurement of renewables automatically increases renewable generation. In the UK, there is limited potential for independent procurement to actually lead to new generation.

## Additionality in renewables procurement

The concept of additionality stems originally from the carbon credits sector. Within the implementation of the Clean Development Mechanism, a carbon credits system within the Kyoto Protocol, additionality is the requirement that the GHG emissions after the implementation of a CDM project are lower than they would have been compared to if the project had not occurred.<sup>12</sup>

This concept is increasingly applied to procurement of renewable electricity, as there is growing concern that procurement in itself does not actually lead to the creation of new renewables capacity and instead just redirects existing capacity. A group of critics have called for a revision of the Corporate GHG Protocol standard to ensure that carbon outcomes are quantified, rather than contractual arrangements, as the latter most often results in neither new renewable generation nor any change in the physical electricity consumed.<sup>13</sup> Also, some large companies within the UK have indicated that they are seeing increased pressure from their investors to show that their renewables strategy is demonstrating additionality, and in other cases, standards related to procurement of renewables specify that additionality must be sought to meet the standard.<sup>14</sup> However, within the UK, due to the market structure, companies currently have limited choice if they are seeking additionality in their corporate procurement.

## Types of corporate procurement

For the private sector, there are several methods for ensuring that their electricity use is powered by renewables. One method is through on-site generation, where for example, a building or a manufacturing site has renewables either on the building itself or within the manufacturing site – such as rooftop solar. The other methods are through corporate procurement, which either consists of a Power Purchase Agreement (PPA) when a company contracts an electricity generator (such as a company running a wind or solar farm) to supply it with renewable electricity or via a green tariff, when a company chooses a tariff from its electricity supplier which is 100% renewables.

### Power Purchase Agreements

The interest in PPAs in the UK is growing. For example, in 2020 Nestlé UK signed a PPA to purchase 125 GWh of green power per year, to cover 50% of their UK electricity consumption. That agreement, along with their already existing PPAs, ensures that all of their UK consumption is covered by PPAs from renewable energy backed certificates. In 2017 BT signed a 15-year PPA to purchase 100 GWh per year of renewable electricity generation. However, accurate aggregate figures are not known for how much electricity consumption is backed by PPAs.

The growth of PPAs is primarily being led by large corporations, such as Nestlé, but some smaller companies are looking to create buying clubs to leverage the demand of numerous companies to strike contractual arrangements. This approach is building on a precedent in the higher education sector, where 30 Universities have banded together on a £50m PPA.<sup>15</sup> Some local authorities, like Warrington Council, have entered into PPA arrangements also.<sup>16</sup>

PPAs are increasingly being pursued by corporations and other entities in the UK for a number of reasons. PPAs can provide a corporation with greater control over their electricity supply, enabling them to lower and fix electricity costs over the long-term. Across Europe, 92% of companies who purchased PPAs indicated that they were signed as a way to reduce electricity costs.<sup>17</sup> This is increasingly relevant in the UK, where prices agreed within the PPAs for large-scale corporates now can be less expensive than pursuing green tariff approaches. It also appears that companies are pursuing PPAs for Corporate Social Responsibility reasons, as they feel they have more control over the terms of the renewable supply conditions within a PPA over a green tariff, and can better achieve additionality through a PPA by specifying in contracts that new generation is created.

## Green tariffs

The other option for companies seeking to procure renewable electricity is to procure through green tariffs. An energy tariff is essentially how an energy provider charges a customer for their gas and electricity. Customers – consumers, businesses, and other entities – can choose a fixed or variable tariff, but increasingly they can also choose a green tariff which specifies that some or all of the energy and/or electricity is 'matched' by purchases of renewable energy that the energy supplier makes on a customer's behalf.

These tariffs are growing significantly in popularity. In 2019, there were 355 tariffs on sale, and over half claimed renewable energy credentials; in 2016, this figure was just 9%.<sup>18</sup> As more and more customers are seeking to make corporate and individual lifestyle decisions which reduce emissions and contribute to combat global warming, they are turning to these tariffs as a means to do so.

For companies seeking corporate renewables procurement, these tariffs provide a more flexible option than a Power Purchase Agreement. It is simple for a company to switch tariffs, and they do not need to lock into long-term agreements. There is significant choice in price of tariff, as well as in their approaches to 'green' which can be tailored to their own corporate strategies – for example, some include nuclear, but others do not.

However, because of the design of the electricity market system in the UK, where the majority of renewable electricity generated is already covered by Government schemes, most of these green tariffs do little more than simply send a signal to their suppliers that they desire renewable electricity. Ofgem has ruled in the past that of these numerous green tariffs, there are only three suppliers providing green tariffs which can be considered to be creating new renewable generation because of the way they match the renewables demand created by their consumers with contracting new supply.<sup>19</sup> In fact, they state clearly that 'We do not have sufficient evidence that existing renewable tariffs provide additional environmental benefit beyond existing renewable generation'.<sup>20</sup> This is largely due to the structure of the system underlying renewable generation in the UK, as well as the lack of transparency over the various green tariffs that exist.



## 2. The electricity market system and the role of REGOS

The electricity market within the UK has its benefits and challenges, but as the CCC identified in its 2020 Progress Report, it has been a major decarbonisation success story in the last decade. Emissions from electricity generation decreased 62% over the period 2008 – 2018. Carbon intensity fell from around 500 gCO<sub>2</sub>/kWh in 2010 to 245 gCO<sub>2</sub>/kWh in 2018. Electricity generated from renewables was 3% of total generation in 2008, and rose to 22% in 2018. In Q3 of 2019, renewables provided more electricity than fossil fuels for the first time in the UK's history.

The Government introduced Electricity Market Reform in 2012, which included a host of policies that led to the decarbonisation of the UK's power sector and complemented previous frameworks including the Renewable Obligation Certificates (introduced in 2002) and Feed-in Tariffs (introduced in 2010). Significantly, Contracts for Difference (CfDs) were introduced as part of these reforms, and this Government mechanism enables developers of renewable projects to enter into 15 year contracts with a Government owned entity at a fixed price for the electricity they generate to protect them from price volatility in the electricity market and provide certainty for investors.<sup>21</sup> This approach has helped drive an increase in renewable generation, and as a result of this and the other mechanisms mentioned, the majority of renewable generation in the UK has been - and continues to be - covered by Government policies.

### The REGO system and the link to green tariffs

In addition to the subsidy and support mechanisms mentioned, the UK's electricity system also includes a scheme which enables the identification of the proportion of electricity consumption coming from renewable sources. This system currently drives the approach to green tariffs in the UK. The REGO (Renewable Energy Guarantees Origin) scheme is part of the EU's Renewable Energy Directive required by all EU Member States in order to report what proportion of electricity consumption is from renewable sources, and was launched in 2015 in the UK.

One REGO certificate per MWh of eligible renewable output is awarded to generators of renewable electricity. The purpose of the certificate is to prove to the final customer that a given share of energy was produced from renewable sources. When an energy supplier buys power from a renewable generator, in order to sell to its customers it also buys REGO certificates to prove that the origin of the power is from a renewable source. It is also possible for REGO certificates to be sold to suppliers without directly selling the supplier energy – these are called 'unbundled REGOs'. These REGO certificates are fairly inexpensive, and depending on the market, can be priced between £0.5/MWh to £4/MWh.<sup>22</sup>

The REGO system is a critical component of the green tariff approach. Green tariffs which promise a proportion of renewables are basing this commitment on the REGO certificates it purchases. For example, if a green tariff promises 100% renewable electricity, it will need REGOs for 100% of its electricity supplied. Because of the ability to unbundle REGOs, this could mean that the supplier of the green tariff is not actually purchasing renewable electricity but it is simply purchasing the certificate. In practice this means suppliers could purchase electricity from a fossil fuelled power plant, but by purchasing REGO certificates, they can then sell it to consumers under a green tariff.<sup>23</sup>

Conversely, some electricity suppliers, particularly those identified by Ofgem as providing true 'additionality', commit to purchasing the actual renewable electricity from the generator as well as the certificate and typically commit through Power Purchase Agreements with generators that this purchase of renewables will lead to new generation. However, this approach is rare and outside of this the supply of REGOs is largely determined by the incentives created by Government policy, which is independent of whether consumers are on green tariffs or not. The decoupling of the buying of REGO certificates from buying of electricity has increased in popularity as it is a relatively inexpensive way of 'selling' green energy to consumers through green tariffs.<sup>24</sup> This decoupling is leading to companies and consumers sometimes to believing that they are supporting decarbonisation by purchasing renewable electricity, when they are not.

The buying and selling of REGOs is a market, and when supply exceeds demand, the price lowers; conversely, when demand comes close to supply, the price increases. REGO prices are increasing as there is more demand for green tariffs and therefore for REGOs; however, it is widely understood that even with the increasing value of REGOs, the structure of the system will never provide prices high enough that will act as a support mechanism for new generation on its own. This would only happen if the energy supplier of the green tariff specifically chooses to enter into new capacity generation contracts (PPAs). Therefore, the REGO system and, overall, the green tariff system cannot be considered as a support system to drive new renewable generation. For this reason, green tariffs rarely create additionality – meaning, they rarely lead to any decarbonisation of the system.

With Brexit, the UK now has the opportunity to review this scheme and decide to continue it or develop an alternative system. In the future, it is possible that reforms to the REGO system could lead to a system where purchasing decisions better link to macro system changes as well as better provide tariff customers with greater transparency. These purchasing decisions could link to both the purchase of renewable electricity, but also to supporting greater stable generation and flexibility which is needed for longer-term full decarbonisation of electricity generation.

### 3. The path to full decarbonisation of electricity generation

Under the CCC's Balanced Pathway electricity demand doubles by 2050, reflecting increased electrification of heating and transportation, and this will dramatically increase the levels of renewable generation required in the UK electricity system.<sup>25</sup> However, a significant increase in renewables is not the only necessary action needed to fully decarbonise the UK's electricity generation.

As the proportion of renewables increases within the electricity system, a number of issues arise which must be addressed. As renewable output is variable or intermittent, there may be periods where electricity demand is high and renewable output low, and backup capacity will be needed to ensure demand is met at all times. Conversely, there may be periods where renewable output exceeds demand, and storage becomes essential to ensure the output is not wasted.

These issues present the need for decarbonisation of stable generation as well as increased flexibility in the system. The continued provision of stable or 'always on' back-up generation as well mid-merit power which is able to flexibly adjust output over short-periods of time (e.g. under an hour), and the power sources that currently provide this type of power will need to be decarbonised – such as using carbon capture and storage with gas or hydrogen gas for mid-merit power. Furthermore, significantly increased system flexibility provided by increased energy storage and demand-side response will be essential. Energy storage can be improved by, for example, increased use of batteries, and demand-side response approaches can include flexible industrial and commercial loads, flexible heat pump or HVAC systems; EVs with smart charging; smart domestic appliances and more.

Increased flexibility combined with increased renewable output is ultimately required for full decarbonisation of electricity generation. Currently, the majority of flexibility approaches are linked to pricing, peak demand and supply; meaning, demand is reduced at high price and at peak times, and storage is increased at high output times. This type of flexibility is useful to balance demand and supply, but can potentially lead to adverse effects which actually increase carbon intensity. For example, the state of California recently discovered that their increased use of battery storage was increasing 'carbon storage' by storing electricity at high carbon intensity times of day, which led to increased carbon intensity. They therefore are planning to use carbon signals in 5 minute intervals to allow storage to be optimised based on GHG factors as well as price to continue to bring down emissions intensity,<sup>26</sup> an approach which could be considered 'carbon flexing'. Optimising flexibility to not only balance demand and supply but also support optimal use of the lowest carbon power will be important for future decarbonisation.

#### The importance of storage and flexibility in corporate strategies

The more companies take on not just procurement of renewables, but also investment into these flexible solutions such as increased storage and demand-side response, the more they will contribute to not only their own decarbonisation but also the decarbonisation of the electricity system. There are a number of indications this is already happening, and building on these initiatives at scale can ensure that the private sector has an increased impact on electricity decarbonisation over time.

- **PPAs for storage:** Storage PPAs are being signed in addition to renewable generation PPAs, for example, Shell announced in 2020 a PPA with a 100 MW energy storage facility in the UK in order to optimise the integration of renewables nearby.<sup>27</sup>
- **Flexible tariffs:** Some energy supply companies are offering tariffs which build in flexibility, offering lower prices when supply is high and demand is low.<sup>28</sup> These primarily build in 'price flexing' rather than 'carbon flexing' but as more companies like National Grid and Western Power Distribution are releasing estimates of carbon intensity by time of day, these tariffs could over time be flexed according to carbon intensity.
- **Location-based accounting and linked carbon flexing:** Companies are looking to operate on 100% renewables or zero carbon electricity sources, rather than simply just procuring them. For example, Google is pursuing a 24/7 Renewables Strategy which includes moving from 100% renewable procurement to the aim of sourcing carbon-free energy to match electricity consumption in all places around the clock.<sup>29</sup> This will require greater efficiency, greater use of renewables storage, reliance on some stable generation such as nuclear, procuring more renewables to generate greater capacity than their average usage, as well as matching their demand-response strategies to carbon intensity, not just pricing. They have recently committed to operate on 24/7 carbon free electricity by 2030 through these methods.<sup>30</sup>

## 4. Recommendations for corporate action and policy review

As the UK's electricity supply becomes increasingly renewable, both policy and corporate action will need to adjust to address the remaining barriers for full decarbonisation. Understanding the macro issues and frameworks best needed to support this full decarbonisation must remain the highest priority for the UK Government, but it is also critical that an understanding of the behaviours and actions of actors within the system informs these macro frameworks. Disconnecting the supply-side frameworks from demand-side trends could lead to ineffective Government policy as well as decreased support and trust for decarbonisation from the private sector and the wider UK population. For these reasons, CCC recommends a review of how corporate action can potentially support decarbonisation in the future.

### Corporate action

While the CCC has a mandate to advise the UK Government and devolved Governments on climate change, as part of its work on the Sixth Carbon Budget it is providing information to the private sector on reaching Net Zero.<sup>31</sup> As part of this, CCC suggests action which can not only reduce a company's own emissions within the UK but also support the wider system in decarbonisation. In line with this guidance, the CCC offers a number of suggestions to companies seeking to influence the wider decarbonisation of the UK's electricity system. Companies can:

- **Choose a procurement model which maximises corporate and systemic benefits:** A company should consider the procurement model which works best for itself as a company but also one that maximises decarbonisation of the electricity grid at a systemic level (see Appendix B). Differences mainly come from the long-term contractual nature of the PPA compared to green tariffs. As building renewable infrastructure is very capital intensive, a long-term contract will give developers long-term revenue certainty which in turn provides them with bankability. Whereas with green tariffs, bankability only comes if the energy supplier has signed such a PPA with the developer as the REGO model does not offer this bankability itself. Along with administration complexity and ability to control pricing, the long-term nature of PPAs lend themselves to be better suited for larger companies who can manage the overheads and benefit more from the advantages compared to SMEs.
- **Adopt energy efficiency and flexibility strategies:** Reducing electricity usage overall as well as adopting storage and demand-response strategies to flex usage avoiding peak times and high-carbon times will be important approaches for companies looking to reduce emissions overall even if they are also procuring renewables. With the near doubling of electricity demand in the next thirty years, improved efficiency and flexibility will save companies money as well as contribute to decreased overall electricity consumption and GHG emissions in the UK.
- **Track and ultimately disclose Scope 2 emissions:** More accurate accounting of the physical use of renewable electricity to guide corporate storage and flexibility strategies will ultimately lead to faster decarbonisation than simply procuring renewables.

It may be that companies need to continue disclose using the market-based approach for a number of years until the electricity system becomes more decarbonised in order to reduce their accounted emissions impact, but beginning to measure emissions via the location-based approach can help to prepare the company for ultimate disclosure using this approach once flexibility strategies are in place.

- **Commit to operating on - not just procuring – carbon-free electricity:** As Google has recently announced, companies should seek to operate on zero carbon power in the future to ensure that their strategies are supporting overall decarbonisation of electricity generation and truly are reducing emissions. This could mean relying on not just renewables, but decarbonised base or mid-merit power, and flexing to match consumption with zero carbon usage.

## Policy review

Overall, the Government should consider undertaking a review of the potential role that demand decisions and methods, including corporate, local authority, and consumer procurement and purchasing, could play in the future decarbonisation of the UK electricity system. This could be conducted as part of a wider review of policy mechanisms and their role in a return-to-market strategy once critical mass of renewable deployment is reached. CCC recommends potentially what could be included within the scope of such a review, as well as the principles to which a future system should adhere to as relates to demand-side decisions and approaches.

### Scope of a consultation and review of demand-side decisions and methods

A specific review could be undertaken by BEIS which could include:

- Assessment of the current and future scale of corporate, consumer, and local authority decisions on renewable electricity and electricity decarbonisation now and in the future, specifically including the current scale of renewables procurement by these groups in total TWh as this information currently does not exist.
- Analysis of comparable jurisdictions and how they have linked procurement choice to macro-support for renewables and decarbonisation; for example, Germany's use of the REGO system is designed to actually act as a support mechanism for renewable generation.
- Development and assessment of best options to link micro-procurement decisions to macro-support for decarbonisation, including renewable generation, low-carbon generation and flexibility as well as the potential impact of a carbon price.
- Whether the REGO system or a replacement system should migrate from an 'identifier' system, identifying renewable generation, to a 'support system' which would create new renewable generation, or whether it should simply be amended to ensure that the system enables greater transparency such as by fostering better identification of when renewable electricity or the certificates themselves are being purchased and potentially over time, when low-carbon stable or mid-merit generation power is being purchased.

- Analysis of how macro-support for decarbonisation could sit alongside each other, and whether and how corporate, consumer, and local authority procurement could enable support for renewables and flexibility in the future; this could include over time include revising CfDs so that only a limited proportion of a project's output is covered, leaving space for commercial support for the remainder. For example, in the 2019 CfD auction one offshore wind farm attained a CfD for only part of its output, suggesting that the rest of its output would be covered by other commercial arrangements.
- Development and assessment of the best options to improve transparency around green tariffs, ensuring that corporations, consumers, and local authorities (and their investors) understand which options do and do not bring additional capacity in the system. This assessment should include a review of past approaches such as the 2009 Green Supply Guidelines and subsequent Green Energy Supply Certification Scheme that were later eliminated as part of the Retail Market Review and replaced with the 2015 requirement by Ofgem that green tariffs must include some 'additionality'<sup>32</sup> without specifying a definition which may have lead to numerous suppliers offering tree planting rather than renewable generation PPAs undertaken by suppliers.<sup>33</sup>

## Principles underlying a future system

Principles that should underly any future system that would link procurement choices to decarbonisation of electricity generation within the UK would entail ensuring that sufficient renewables are brought forward by Government mechanisms to ensure that the UK is on the correct path to Net Zero by 2050, and then once a tipping point has been reached in renewable supply, the system could be designed in a way to be able to convert the demand from consumers, local authorities, and corporates into support for new infrastructure as well as flexibility. Key principles would include:

- **Ensuring that the overall regulatory environment is favourable to private or independent procurement** such as permitting, level of grid connection tariffs, credit arrangements for group-buying arrangements and more.
- **Ideally empowering corporate, consumer, and local authorities** by ensuring that procurement choices have a material impact on the wider system, if these approaches can effectively form part of an overall decarbonisation strategy.
- **Increasing short-term transparency over procurement choices especially green tariffs**, particularly if it will not be possible to better improve the link of micro-procurement choice to the macro-support system in the short- to medium-term. Greater transparency could enable companies, consumers and local authorities to shift their business to energy supply companies that are contributing true 'additionality', creating a positive business model for contributing to wider system decarbonisation.
- **Flexibility is recognised and potentially incentivised.** It must be seen to be as important as renewable generation, and incentives or approaches which encourage particularly large corporations and entities to undertake large-scale storage and demand-response strategies.

## Appendix A: Types of PPAs

<b>Table 1</b> Types of Power Purchase Agreements (PPAs)	
<b>Onsite PPA</b>	In which a third party builds, owns, operates, and maintains the installation on-site.
<b>A private wire PPA</b>	In which a renewable installation is located on land adjacent or near to the power consumer (typically less than 10 km); the private wire connection avoids use of the public electricity grid.
<b>A physical PPA</b>	Also known as a 'sleeved' PPA, involves a physical transmission of electricity via the electricity grid, and a contract or a series of contracts between a developer and a corporate power consumer. The two sides agree to set a price (or pricing structure) over the course of the contract, typically 10-15 years in the UK. The parties must be in the same country.
<b>A financial PPA</b>	A financial derivative contract in which the price for the underlying electricity is settled with a Contract for Difference (CfD). The parties agree a 'strike price' and a market-based reference price, and when the strike price is higher the off-taker makes up the difference; when the market price is higher, the power producer pays the difference to the off-taker. There is no physical transmission of power and can be cross-border.
<b>Self-owned off-site</b>	An off-site installation which is owned by the contracting entity.
<b>Multi-buyer PPA</b>	When multiple buyers come together in a buying club and contract one of the above types of PPAs as a collective entity.
Source: RE-Source (2020) <i>Introduction to Corporate Sourcing of Renewable Electricity in Europe</i> .	



## Appendix B: Comparison of PPAs and green tariffs

<b>Table 2</b> Comparison of PPAs and green tariffs		
	<b>Power Purchasing Agreement</b>	<b>Green tariffs</b>
<b>Creates additional generation capacity</b>	Can do – but not always. If the PPA agreement specifies this.	Several energy suppliers offer this – but it is not common.
<b>Length of agreement</b>	10-15 years in duration.	Most can be quite flexible but there may be price penalties for switching.
<b>Bankable for developers</b>	In most situations they are 'bankable' for developer/generator, but will depend on the contract.	Typically not bankable unless the energy supplier has signed a PPA with the generator themselves.
<b>Control over price</b>	Long-term control over pricing.	Very little long-term control over pricing.
<b>Legal and admin complexities</b>	The legal and administration complexities are significant.	Very simple.
<b>Can support non-renewable low-carbon generation</b>	Could potentially be designed to support (e.g. gas with CCS or nuclear), but no current precedents.	Not in current form – would require an identifier system like REGO for this type of generation.
<b>Can support flexibility</b>	They can be and are being designed to invest in storage.	Certain tariffs offer price-flexing and a very limited number link with storage.
<b>Impact on carbon accounting</b>	All will enable full emissions reduction via the market-based method if consumption is matched with contracted capacity. Certain PPAs could enable emissions reduction via location-based method, primarily on-site or private wire PPAs.	Will enable full emissions reduction via the market-based method if consumption is matched with contracted capacity. As price flexing is already offered, there is potential for carbon flexing offering in green tariffs in future which could reduce emissions via location-based method.
<b>Interaction with Government policy</b>	They are typically subsidy free; meaning that other Government mechanisms or subsidies are not already paying for the generation.	Capacity purchased is typically already supported by Government, limiting the impact of corporate procurement.

# Endnotes

- <sup>1</sup> Ecoact (2019) *The Sustainability Reporting Performance of the FTSE100*.
- <sup>2</sup> Note that some of these targets may be actually Net Zero more specifically rather than carbon neutrality.
- <sup>3</sup> Facilities Management Journal (2020) *Mitie research finds nearly half of companies have no strategy to achieve net zero by their target date*.
- <sup>4</sup> Ecoact (2019) *The Sustainability Reporting Performance of the FTSE100*.
- <sup>5</sup> Facilities Management Journal (2020) *Mitie research finds nearly half of companies have no strategy to achieve net zero by their target date*.
- <sup>6</sup> CCC (2020) *Briefing document: The role of business in delivering the UK's Net Zero ambition*.
- <sup>7</sup> RE100 (2018) *Progress and Insights Annual Report: Moving to Truly Global Impact*.
- <sup>8</sup> Cornwall Insight (2020) *Energy Spectrum 705*.
- <sup>9</sup> Data provided by The Association for Public Service Excellence (APSE).
- <sup>10</sup> WRI & WBCSD *The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard, Revised Edition*.
- <sup>11</sup> WRI *GHG Protocol Scope 2 Guidance: An amendment to the GHG Protocol Corporate Standard*.
- <sup>12</sup> ODI (2010) *Carbon offset projects information sheet 8: Additionality, non-permanence and leakage*.
- <sup>13</sup> Available at <https://scope2openletter.wordpress.com/>
- <sup>14</sup> For example, the UK Green Buildings Council (2019) *Net Zero Carbon Buildings Framework* requires that offsite renewables should demonstrate additionality to qualify as 'Net Zero'.
- <sup>15</sup> The Energy Consortium (2019) *British Windfarm PPA Clean Energy Deal – Case Study*.
- <sup>16</sup> Government Business (2019) *Local authorities continue to shine a light for solar*.
- <sup>17</sup> BayWa r.e. (2019) *Energy Report 2019*.
- <sup>18</sup> Which? (2019) *How green is your energy tariff?*
- <sup>19</sup> See Ofgem (2018) *Default tariff cap: overview document*, Appendix 10 and letters to Ecotricity, Good Energy, and Green Energy confirming their approaches as truly creating additional green supply. Available at:  
[www.ofgem.gov.uk/system/files/docs/2018/09/appendix\\_10\\_-\\_exemptions\\_0.pdf](http://www.ofgem.gov.uk/system/files/docs/2018/09/appendix_10_-_exemptions_0.pdf)  
[www.ofgem.gov.uk/system/files/docs/2019/08/renewable\\_derogation\\_letter\\_good\\_energy.pdf](http://www.ofgem.gov.uk/system/files/docs/2019/08/renewable_derogation_letter_good_energy.pdf)  
[www.ofgem.gov.uk/system/files/docs/2019/08/renewable\\_derogation\\_letter\\_green\\_energy.pdf](http://www.ofgem.gov.uk/system/files/docs/2019/08/renewable_derogation_letter_green_energy.pdf)  
[www.ofgem.gov.uk/system/files/docs/2019/08/renewable\\_derogation\\_letter\\_ecotricity.pdf](http://www.ofgem.gov.uk/system/files/docs/2019/08/renewable_derogation_letter_ecotricity.pdf)
- <sup>20</sup> Ofgem (2018) *Default tariff cap: policy consultation*, Appendix 13 – Renewable tariff exemption.
- <sup>21</sup> BEIS (2020) *Policy paper – Contracts for Difference*. Available at:  
<https://www.gov.uk/government/publications/contracts-for-difference/contract-for-difference>
- <sup>22</sup> Because REGOs are mostly traded bilaterally, there is little price transparency. Pricing estimates have been provided to CCC in interviews, as well as through ICIS (2020) *ICIS Power Perspective: British GOs price rise expected to continue on healthy demand outlook*.
- <sup>23</sup> See <https://energysavingtrust.org.uk/home-energy-efficiency/switching-utilities/buying-green-electricity>
- <sup>24</sup> ICIS (2020) *ICIS Power Perspective: British GOs price rise expected to continue on healthy demand outlook*.
- <sup>25</sup> CCC (2020) *The Sixth Carbon Budget – The Path to Net Zero*.
- <sup>26</sup> Proposed Decision of Commissioner Rechtschaffen (2019) *Decision approving greenhouse gas emission reduction requirements for the self generation incentive program storage budget COM/CR6/mph*.
- <sup>27</sup> PV Magazine (2020) *Shell PPA for electricity from 100 MW energy storage facility in the UK*.

<sup>28</sup> For example, the Octopus Energy Agile Tariff.

<sup>29</sup> See <https://sustainability.google/projects/24x7/>

<sup>30</sup> See <https://sustainability.google/>

<sup>31</sup> CCC (2020) *Briefing document: The role of business in delivering the UK's Net Zero ambition*.

<sup>32</sup> Ofgem (2013) *Consultation on Improving Consumer Protection in the Green and Renewable Energy Offers Market*.

<sup>33</sup> Ethical Consumer (2017) *Do Green Energy Tariffs Make a Difference?*



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