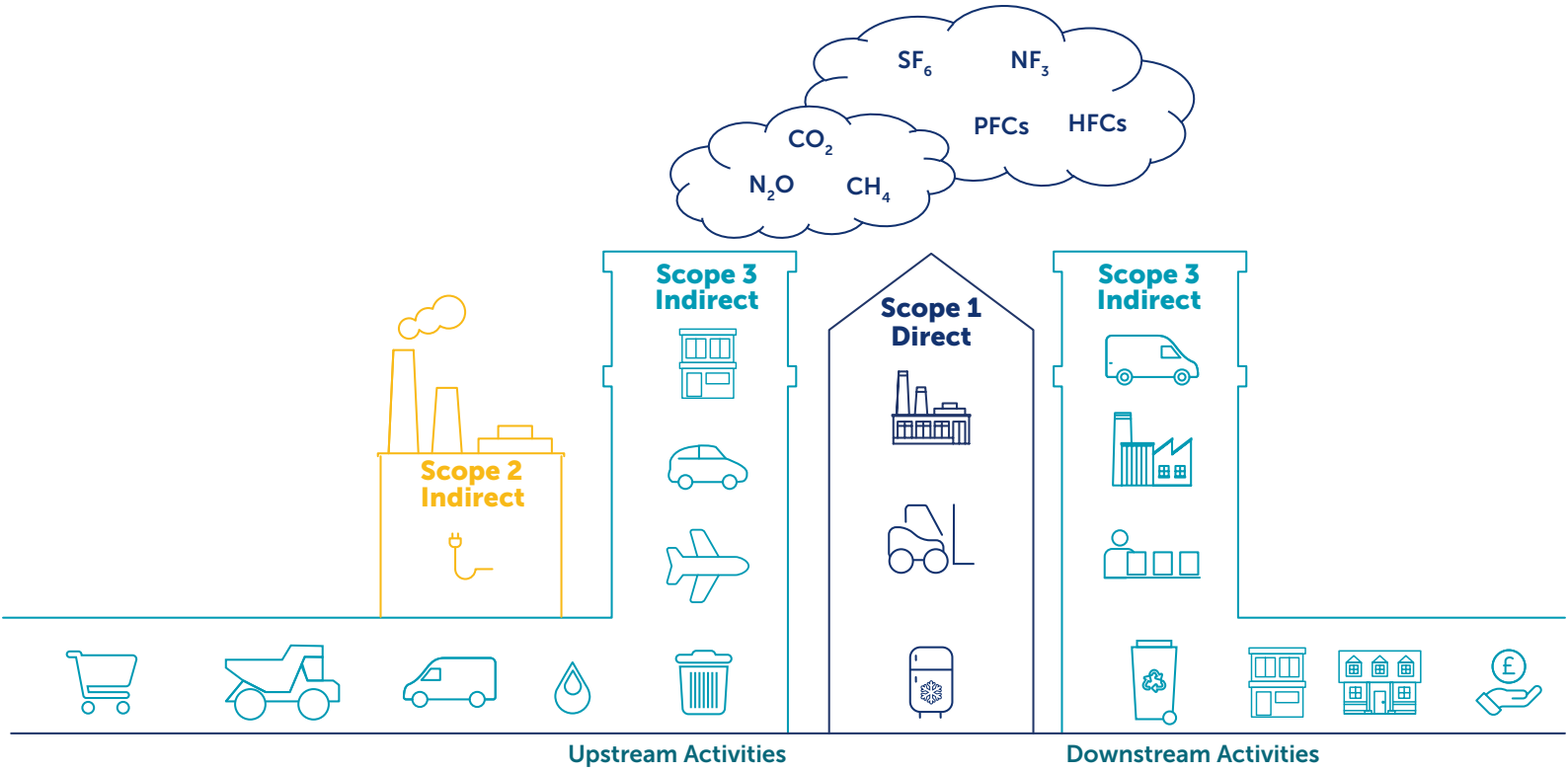
Understanding the Decarbonisation Scopes



Despite the urgency, Many organisations, from large corporations to SMEs are delaying decarbonisation because of fears over the budget required.

If the plan predominantly involves offsetting, this will incur a lot of additional costs. If looking at self-generation and investing in renewables based on your current energy consumption, this could result in over-specifying the additional plant and thus incurring additional costs. Knowing what your energy consumption is and how it can be reduced by better control will reduce the cost both in terms of the investment required to decarbonise and operationally over the lifetime of the building.

In the past, consultants and specifiers made assumptions about how a building would be used in the future. Going forward, buildings need to be flexible. This can only be done by monitoring actual use and using this insight to make better decisions.

This document is a transcript of a webinar discussion by a panel of experts on the subject of understanding the Scopes defined in the greenhouse gas protocol, and how best to proceed on the journey towards decarbonising buildings

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Steve Loughney - Technical Director SSE Energy Solutions

Good afternoon to everybody, and welcome to this the latest of SSE's Webinars to do with decarbonising buildings. This particular session is about understanding decarbonisation scopes and getting to net zero as a target.

What I wanted to do today is to open up a topic, that this is not just an organizational issue, It's a whole country issue. Back in the summer, of 2022, there was a high court ruling that the government's strategy for decarbonisation, wasn't actually meeting the Climate Change Act of 2008 and that the strategy had to be actually increased and improved

So we're all under a lot more pressure now to actually look at how we're going to achieve to reduce our carbon and achieve net zero. We've got a group of people here today who can actually help us and guide us on how to do that.

Paul Wynne - Solution Development Manager, SSE Energy Solutions

SSE is probably better known for its large-scale generation, its transmission and distribution and probably less well-known for its customer decarbonisation.

I have a role focused on customer energy solutions that are distributed, decarbonising and decentralized. And the idea there is really to introduce resilient, affordable, and carbon-reducing energy schemes for people.

Howard Wilson - Country Lead, Ireland, Siemens Building Products

I represent the portfolio of products for our BMS line, our Fire Detection, and our Life Safety line. Here in Ireland. I manage a territory of both Northern and Southern Ireland with support from my colleagues and GB.

Anthony Dann - Solution Senior Design Partner, Honeywell

My role is about helping clients get the most out of their BMS and to support them with their goals and operational challenges.

Jane Mossman - Delivering the "Better Futures" programme in London

I run London's largest publicly funded net zero business support program, and our directive is to support just over 600 businesses in 18 months, so fairly ambitious. And we're funded by the mayor of London, so it's completely free for businesses.

So what we are going to look at is trying to achieve net zero and the different scopes that have been defined around it. So what we'll do is kick off with Paul to help us to understand what are these scopes associated with net zero.

Greenhouse gas accounting and net carbon have become the new frontier. First, some background, on the subject in the UK (the Republic of Ireland has different legislation)

It became a requirement 10 years ago in the UK for quoted companies to report their annual[carbon] emissions through the Director's Report. Five years ago, regulations were changed to require quoted companies, large unquoted companies, and LLP's to also report their greenhouse gas emissions through that financial report. Public bodies were exempted from this. But there might be other legislation that requires them to report as well.

Fortunately, at the same time, the government also introduced the Streamlined Energy and Carbon Reporting (SECR) framework, which is a great guide and requirements document that allows people to have a good framework. And within this, there is also a Greenhouse Gas Protocol corporate accounting and reporting standard that sets out the detail of what needs to be reported. This is a very good framework that tries to ensure the accuracy, fairness, and truth of the accounting.

At the heart of this protocol is this diagram. It talks about seven different greenhouse gases.

- Carbon dioxide (CO_2)
- Methane (CH_4)
- Nitrous oxide. (N_2O)
- The four so-called "F" gases, the fluoridated gases, are typically used in refrigerants and manufacturing processes
    - Hydrofluorocarbons (HFCs)
    - Perfluorocarbons (PFCs)
    - Sulfur hexafluoride (SF_6)
    - Nitrogen trifluoride (NF_3)

These seven have been identified as having the biggest impact on our atmosphere in terms of both the concentration and the Greenhouse Gas Potency of those gases.

Overall, carbon dioxide has been estimated to have a 75% impact. Methane, and nitrous oxide combined to have a 20% impact, and then the four F gasses have an impact of around 5%, despite these four having potencies several thousand times greater than that of carbon dioxide.

The other thing that the protocol introduced was the concept of Emission Scopes. It creates three emission scopes to differentiate between direct and indirect emissions, and also the activities in the emissions that fall within an organisation's control, or those that are mainly external.

Scope 1

Direct emissions from organizational activities. So typically this would be a result of:

- Burning fossil-fuels
- Heating or producing power
- Fleet vehicles
- Fugitive gases. These can be releases of F-gases from refrigerant systems, or of methane from other systems.

Scope 2

Indirect emissions, specifically from purchased energy, so in the form of:

- Power
- Heat
- Steam
- Cooling

These emissions will be the generating organisation's Scope 1, but the consuming organisation's Scope 2

Scope 3

All other direct emissions, upstream or downstream, associated with the organisation

Scope 3, therefore, refers to third-party emissions. These are considered to be more outside an organisation's control, but can still be influenced, and we will return to this later, as Scope 3 represents another organisations Scope 1 and 2.

The exception is the matter of employee commuting, which could be looked on as Scope 4. We will therefore focus mainly on Scopes 1 and 2

The Greenhouse Gas Protocol Standard also very usefully defines the sub steps that need to be completed for the scope measurements. The starting point is to define the inventory boundary, which is the transparency of the operating structures, the activities associated with the company's scope, and also the leased assets.

Choosing the base year is very important because this allows the regular tracking of the emissions and reduction over time. Both of these things need to be set up, then there are five steps:

- Identify the greenhouse gas emission sources
- Select the greenhouse emission calculation approach
- Collect the data associated with each
- Apply a calculation
- Apply all that data to a corporate level of reporting

So there are a lot of clear, defined, reporting mechanisms, financial reporting mechanisms, and breaking down the carbon usage or carbon production into different areas.

Howard, when you're speaking to people that you're dealing with on a day-to-day basis, are they aware of these things as part of their organizations?

I find that some end users have individuals with key responsibility for this within their organization, depending on the size of the organisation, they may have a full-time Facilities Manager, or Energy Manager, or individuals within the company, that take responsibility for that. For smaller companies, it's much more difficult.

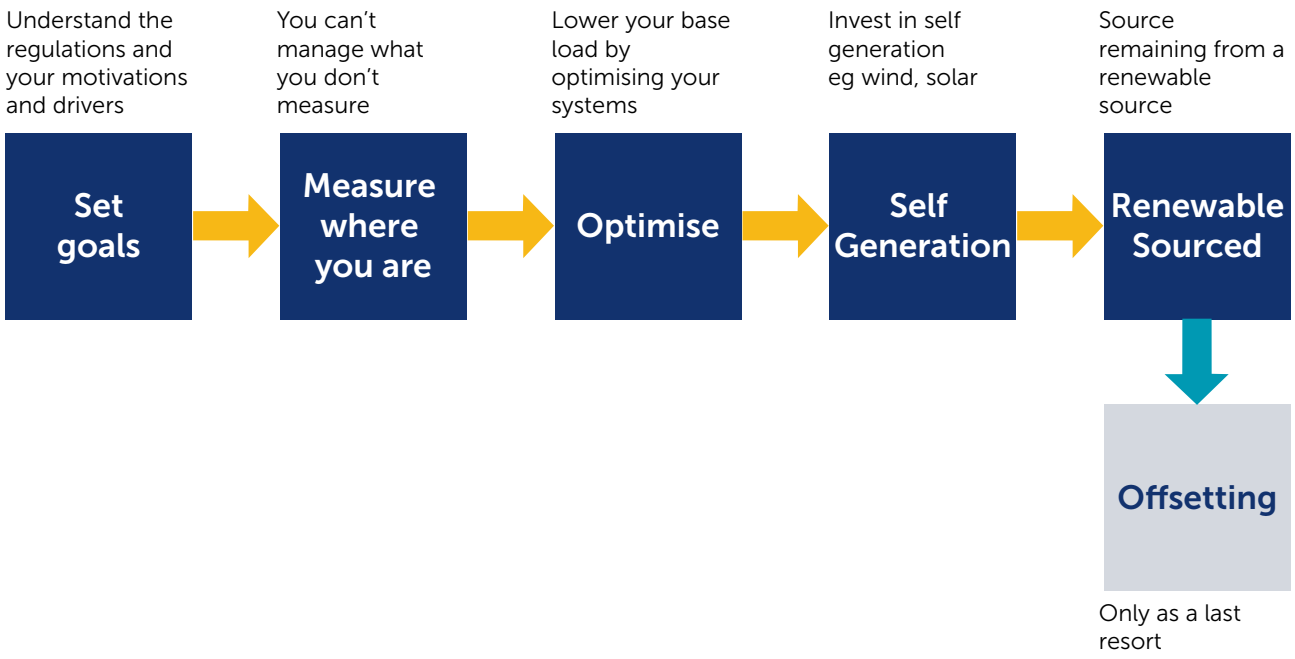
There are certain terms and terminology that Paul has used already, that some people really struggle to understand, nor do they realize that there are benefits too, or that lots of support is available too.

Yes, everyone knows where we want to get to and sometimes it is knowing where to start, and how far along that journey they are. Every customer's situation is different: factors such as the style of their building and the age of their equipment come into play, so, I don't think everybody is necessarily starting always at the same place.

Jane, you are dealing with some smaller organizations; they might be struggling with some of this.

It's a real mixed bag but I'm pleasantly surprised by how informed quite a lot of the businesses are, and are quite far on their journey, but there are definitely people that look at me blankly. Part of what we do is try to demystify the subject, make it very simple using plain English and cut the jargon.

We have this requirement to account for this carbon, some breaking down of that carbon into these scopes, so it's now about setting strategies. How can an organization set a strategy for the more direct scopes of carbon that they're responsible for?



This diagram introduces a series of steps, which any organization can follow to chart their Scope 1 and 2 emissions over time.

It starts with the organization defining its ambition, and levels and setting up the measurement of the current and the future status of emissions, and then implementing a hierarchy of actions, which covers the optimisation of the operations through building fabric, and through energy efficiency, which then reduce those scope 1 and 2 emissions. However, it can then go further by introducing self-generation, which can help with both Scope 1 and Scope, depending on whether it's heat or electricity.

Renewable energy other than from its own estates may be available locally or from major energy providers, or globally when it comes to offsetting.

While there are a number of different approaches in this hierarchy, arguably, the most challenging is probably step one, because it takes someone who really understands all about the framework, how to modify scopes, how the scopes are measured, and how they are reported. You are setting up for a major journey, that the world can see and acknowledge.

Obviously, the UK Government set a target for 2050, but, for example, London set a target for 2030, and most of the boroughs have set a target for 2030. So I don't think it's unrealistic for businesses to set that target, and we're seeing that a lot of the businesses that come on our program do set it. Having that goal, we need to get "here" by this point, so now what do we do?

High energy costs are a huge factor at the moment and people are panicking because they don't understand their energy demand. I'd always advocate for an objective expert opinion on what is feasible with your building and within your budget.

That said, you can do a basic energy audit yourself by walking around and looking at what appliances you have, and what type of lighting you have. You know if something is hot, it is using a lot of energy. Rather than undo all your light bulbs just hold your hand up to it and see if you've got LED, if they're hot, they're not!

If you can understand the few things in your building, which use a lot of energy, or maybe it's your fleet of vehicles, then tackle that first. When you start to see the costs going down, you will be motivated to keep going.

I've spoken to many organizations who've said, we want to be net zero by 2030, then I've asked the question, well, how much carbon that you're producing at the moment, and they're not entirely certain. Is that something you're seeing as well?

Yes. We help businesses manage their carbon footprint. And there are many free resources out there that do that. It's not that difficult unless you're quite a complex organization.

Know your energy bills, if you have a fleet, what the fuel usage is, for example, and that is your Scopes 1 and 2, and mandatory for larger companies, so, it can be a quick endeavour.

Businesses struggle more with these costs, if they are in an older property, or if they are an online company that doesn't have an obvious energy bill. In the latter example, the answer is to understand your Scope 3 emissions – the emissions that your data centre records as Scope 1 and 2. There are tools and calculators available to do this. Understanding where

the biggest ones are and tackling those.

Moving on to offsetting, I've come across organizations where a large part of their plans are offsetting.

Offsetting is something whereby an organization will pay another organisation to bring down their carbon, or sequester carbon dioxide (e.g. by planting trees) on their behalf

Although a measure of last resort, if a company hasn't got land or has insufficient local resources to manage its own emissions, then it's still a sensible measure and it's making a financial contribution to reducing carbon as long as that is through an accredited, policed, and audited scheme.

In the longer term, if we're committed to reducing the quantity of gases in the atmosphere, we do need to be taking step's ourselves, not relying on offsetting as an option.

Everyone should do what they can, within the resources that they have, but I wouldn't like to see organisations penalized simply because they haven't got those local resources. It might ultimately be something that has to carry on, but negative emissions are potentially a viable thing, but ultimately, I'd say to do what you can with your own estate first. Addressing fabric and energy efficiency is right up there, but, if you can't, then, these are the lower hierarchy options.

So looking at the strategy, the next step is to measure, and looking at the measurement elements, once we've set our target, what are the things that you would be looking for in terms of measuring?

I think the statement is very powerful that you can't manage what you don't measure. We get bills coming in and we can see a monthly or a quarterly bill, but to make actual changes, we need to start delving into the amount we consume. We would want to measure:

- Energy source
- Electricity, gas, heat, heating, water?
- Which actual devices are consuming that energy?
- Are we using energy for heat, ventilation, cooling, and lighting?
- Small power things that are plugged in

It's only when we start to try and measure things individually, we can start to think about strategies to help us reduce that energy, and that's where the BEMS comes in. The BEMS is typically connected to all your energy-consuming devices in a building, heating or cooling, and hot water supply. We determine when things are on and when things are off.

So what it can do is give you access to all that information, The BEMS should give you easy access to your data, in an easy-to-read and understandable format, to make it relevant.

Coming back to Jane's point, having the bills is better than nothing, but it's a bit like driving your car using just the fuel gauge when you've got a dashboard of information that can be used to inform decisions and put the energy consumption into some form of context.

I looked at my energy meter at home and discovered that I'd consumed twice the amount that I had yesterday. Looking out of the window I saw frost on the ground and realised that it was much colder today than yesterday and so my central heating had fired up and was running harder. But if I was looking at the bill three months later, I wouldn't know that.

So connecting and measuring inside the BEMS can give you that contextual data so you can link it to weather conditions. So You can get some context on exactly where energy is being consumed and why?

So using the BEMS, we can look at "was it cold outside?" So context is very important to allow you to get that extra information you need.

Setting the goals and the measuring, it is important to have an overlap between what your goal is and what you are actually measuring.

PW Step number one is key, that you set, achievable and measurable goals, and that you can sustain that measurement over time, even though your business is changing, e.g. your occupancy is increasing, or you're doing different things with the building; you might need to reset that original goal to manage these changes. You need that long-term, 10-year, horizon, to make the right decisions, and this is really where you need some expertise, and there is an ecosystem out there that is developing around the expertise that can help organizations develop this first step.

From measuring where you are, you've now got the information, you have a source of data that you can start to look at and can start making decisions as to how you optimize; how you use your energy. Doing that is the first step on the journey of reducing

waste before actually investing money. As Jane stated earlier, the finances of investment are always restricted. So, in terms of optimization, what are the things that you can do with the BEMS to optimize the amount of energy that you use?

Once we know when we're starting to consume energy, we can start to make decisions. What I talk to clients about is linking this back to the goals that they are trying to achieve. There are some easier wins, that we can get, just from optimizing your current building stock.

We can ask what's your point strategy. Do you have a strategy or a policy for defining the temperatures you need in your building? A lot of the time, these are not set. Often the operational times are not set correctly or have been switched to manual. So, if we could set some good policies, we have that benchmark to compare against and resetting to those policies will reduce energy costs, and lower our carbon. The BEMS has many strategies inside it to do this, from simple set point controls, not heating more than you need to and only in those areas where you need it.

After the pandemic, our use of buildings is changing. Occupancy is reduced, so we can start looking at how our buildings operate, where our people are in the buildings, and make decisions around how we use our buildings today.

So for me for optimizing, it's also knowing how our buildings are changing and keeping the BEMS strategy up-to-date accordingly.

Are there technologies, hardware or software in these buildings that could be improved or changed?

In the Autumn of last year, in Ireland, the public sector was given a strategy to reduce their set points within the buildings from 21ºC to 19ºC, which I thought was a clever move. I equally thought "how many of these office building managers know what their set point is?" If it's 23ºC then that's quite a reduction. They were also asked to turn the heat off in office buildings at least 1-2 hours before the building closes. However, one of the easiest ways of optimisation is to move from time zone-based control to demand-based operation, so, you're only using the services and the energy when there's a demand for it.

To answer the question, yes. If the building has the luxury of having a BEMS, you are likely to have a front-end or supervisory software. I surveyed a hotel recently and I asked a facilities manager "Where's your front end?" He didn't know what that was, so I said "Do you have a server room or in your office do you have a computer with software that controls your air handling units, pumps and boilers in your hotel?"

It was found in the server room, but the manager didn't know what the password was.

So normally, terminology software is there, but isn't being used –

Which brings us back to measuring where you are. If you're not using the functionality that you already have, you are missing out on data and information that can help you make better decisions.

And what you're also talking about, there is demand-based control, which links back to the ISO Standard, ISO 52120 (ISO 52120-1:2021 Energy performance of buildings — Contribution of building automation, controls and building management), which is all about demand-based control of buildings. And that is already part of the UK building regulations, and I have seen it talked about in Ireland as well. So there's an international standard that gives us guidance on how to optimize buildings as well.

Moving on, what are the options available there in terms of self-generation?

There are many, but I would just re-iterate that come to these after you do the fabric, after you look at the energy efficiency, and demand management is a key part of that first step.

Self-generation has been a 'hot topic' for many years and, previously, gas-fired combined heat and power (CHP) plants were the option of choice. However, they won't get us to net zero because they'll still burn gas. As a result, the options available now are solar or wind. There are difficulties in planning with wind, so it is typically solar that we're looking at; installing solar on roofs, carports, car parks, and also large areas of land close to an organization's demand.

In addition to electricity, you can also then self-generate heat by moving away from gas-fired systems to heat pumps, or biomass if the biomass fuel is from a sustainable source. There are many options. If you directly connect the electrical generation behind your import meter, then you will be essentially reducing your importing of electricity, and then by virtue of the calculation method, you would also be reducing the Scope 2 emissions, which is very useful from a reporting point of view.

The key to all this is to get a solution that is resilient, affordable, and will also reduce fuel your Scope two emissions.

If you are going to invest in self-generation of energy, you need to get your usage of energy to the right level beforehand. You need to have optimized your load, otherwise, you could be investing in more solar panels or other renewable generation, than you need to: optimizing needs to be the first step.

Jane, in terms of the organisations you are dealing with, is self-generation an option?

Definitely. Quite a lot of SMEs are investing in solar panels, heat pumps, et cetera.

We have one SME, a security company in West London that is already net zero. They have reduced their emissions by 90%, which is quite a feat. Another business that went through the program is reducing 9% year-on-year by installing solar panels and insulating their buildings, et cetera. I think these days, especially with prices, the way that they are, and the payback periods being shorter and shorter, it's costing some businesses more money not to do anything, so, there's a big incentive to act, so some businesses are throwing money at the situation.

It's good to give a few examples of businesses that have reduced energy just by switching to demand-based operations. For example, if a bar is cooling drinks, they don't need to be operating 24 hours a day, especially not soft drinks, so a BEMS or even a simple timer can be used to switch the fridges off when the bar is shut. Fridges use a lot of energy. Smart, cellar systems also cut energy consumption significantly.

Automation is good: people forget to do things so take them out of the picture. Businesses need to realise that there's a lot you can do that's free.

That is an interesting point you make about automation because it links back to what Howard was saying about demand control. You can get people engaged in certain things, such as switching off the lights, but after a while, they'll get bored of it and will leave the light on, or just forget. So automation is a very useful way of keeping these things going.

I think we forget that people, the people we work with, all have opinions, feelings, and drivers, so it's good to engage with everyone before you change all the lights or put sensors in. For example, darkness is scary, so if the toilets are dark, people don't want to go into them: You need to think about the user experience as well.

Lights have different levels of glare. If you are working under very strong LED's it can give you a headache if you're looking at a screen. There are many things to think about, so talk to your team to figure out what lights they prefer before changing them.

So, there is a people and cultural thing as well.

Definitely. And issues of safety. We worked with a business that installed sensors in stock rooms. However, the sensors were not turning on quickly enough, so people weren't going into the dark aisles where the stock was, so none of that stock was rotated and eventually they had to take all the sensors out.

Moving on to the next stage, which is then the renewable sources from a supplier. What sort of things we should be considering, in terms of renewable energy?

If you don't have the natural resources and land, too to self-generate, and you've been through the previous steps, then you can fall back on other people generating renewable energy for you and getting this through the grid supply, and there is a massive transition occurring on the grid system to decarbonise it.

In the UK there is only one coal station left, and gas stations are reducing output. Conversely, more and more wind, particularly offshore, is being produced and more and more storage coming online to make sure that such intermittent sources are used more effectively.

The way to get access to this renewable energy on the grid system is to buy REGOs or Renewable Energy Guarantees of Origin.

These essentially demonstrate that there was a packet of energy generated that generates a certificate that you can buy, and this certificate can be bought independently of the energy or it can be bought with your energy supplier.

There are some 'cons' as well as 'pros' in that there's no temporal or timing matching between generation and supply with REGOs, and they're essentially tradeable over a year, so it's not demonstrating the timing of the generation and also it's not generating that your generation was additional: it could be from existing sources, which some people think is OK, whilst other people frown on that.

I think renewables were up on previous years, but it was still not 100% of electricity generated.

There's always going to be a balance on the wider grid system between resilience, from intermittent sources, from the affordability of the power, and also going on that journey, simply because there's just not a big enough supply chain to fill and also

yet full of wind farms, and even if there was, that wouldn't be enough storage and interconnection in the grid system to cope with that. So, it's, it is a journey that we're all going on, and the wider system is going on. We're just not there yet.

In terms of, as an approximate figure, what would be the level in the past year of electricity generated from renewable sources?

I think the figure from memory was about, on average, 30%. But the capability is, on some days when it's sunny and windy and there is not too high demand, then I think you're getting pretty close to everything coming from renewable sources with your 'resilient' fossil fuels sitting in the background, just in case something happens.

But as it stands at the moment, across the year, it's still predominantly going to be fossil fuels, which is why it's so important to reduce our consumption.

If you can imagine that the typical load factor for solar in the UK is about 11% based on its capacity and wind is around 40% based on its capacity, then, you need to massively oversize the capacity of those renewable sources to get near to 90 or 100%.

So, if everybody changed across to renewables-sourcing tomorrow, as part of their net zero strategies. That's going to be quite difficult because there isn't enough capacity.

Yes, there are just not enough renewable megawatt hours and certificates to go around for everyone, to convert tomorrow.

So it goes back to optimizing and self-generation if you can. Because it is not predominantly the electricity generated in the UK, is it more expensive?

In terms of buying the certificates, there is a price on those certificates that was typically a few pence a few years ago and now he's got to the £5-10 a certificate. So, there is a tightening of the supply and demand for those certificates as the appetite for these is outstripping the supply or the installation of new renewable sources.

So it comes back to needing to reduce waste

beforehand and also looking at self-generation, in addition to where you can buy renewable energy sources. But it goes back to what you were saying earlier, Jane, if we look at if we install solar panels and we buy renewable electricity externally, that's an additional cost, is it?

Buying solar panels is a CapEx investment, but if you don't have the money and you've got a large roof space, then companies will do it for you. And then you would buy the energy from them at below market rate. They can set up the PPA (Power Purchase Agreement) if you've got enough space for it.

When you do the maths for some companies, and you look at the cost of their bills versus what they'd save over seven years with installed solar panels it's "a no-brainer", so we're seeing more and more businesses doing it as a matter of survival, and they are wishing they've done it a couple of years ago.

So, yeah, I mean, it's the cost of doing business these days, Energy, and I know I'd caveat the renewable bill.

I wouldn't switch energy contracts now, unless I had to, because the prices are crazy at the moment. Unless you have to renegotiate, stick with what you've got until the contract is up for renewal when the prices will go down a lot.

But it's also looking at what different organizations can offer as well. If they can offer renewable sources at a reasonable price, it is worthwhile, so we need to look in detail at what each supplier is offering.

We've gone through setting up goals, we've set up hard targets that we're measuring, we've got rid of waste and we're optimizing what we have. We might put some panels on the roof, and that might be actually in collaboration with another organization. Whatever we can't cover ourselves, we could be working with a utility company that works with energy from renewable sources. After all of that, they may still need to be some offsetting, but it's what we're saying is a last resort.

And as Jane was saying, 'where there's a will there's a way' and there's some innovation, such as switching off, switch off the fridges when you don't need them.

The innovation coming through in the UK. And Europe is amazing and I think we're going to see some real game-changers, now and in the future. If you've got enough space, you can do things like Lease lighting, someone else may pay for your heat pumps, etc.

There are grants such as the Industrial Energy Transformation Fund, for which £70M is available if you are a manufacturing site and you want to install ground source heat pumps, or to innovate your large truck fleet, the government can provide a grant to allow you to do so.

So to summarise, Scopes 1 & 2 are achievable if there is the will to do it, and there are clear steps that you can take,

sometimes it can be funded too. But what about Scope 3? That appears to be a big topic.

The difficult Scope 3!

It is generally considered to be outside an organisation's control, but it can be influenced by organizations putting pressure on their upstream and downstream supply chains. In the tendering process, the supplier can be asked to report on what they're doing, what measures they are taking, and how, they will be performing in the future and that can go into the scoring system when you come to assess those.

Our organisation's Scope 3, therefore, is Organisation B's Scopes 1 & 2.

So Organisation B should already be looking to address their Scope 1 & 2, not just to respond to their customers, but also to respond to their investors, their shareholders, and employees, so there is peer pressure for organisations, to reduce their Scope 1 and 2, which will then feed into each organization's Scope 3.

So if you are selecting your suppliers based on their taking Scope 1 & 2 seriously, you're starting to deal with your own Scope 3?

Exactly! They should be dealing with it because they're getting investor and other stakeholder pressure, so we are just adding to their motivation, to want to reduce their own Scope 1 & 2,

Howard, from a Siemens perspective, obviously you are supplying many different organizations, how are you doing?

Firstly, I looked up the figures for Ireland. It's 24% wind energy, and SSE Airtricity is the biggest producer of wind energy in Ireland.

To answer the question, the big thing from Siemens perspective is EPCs (Energy Performance Contracts).

So, the benefit that we have in the portfolio is the ability to, offer our breadth of products and services. We're able to work very closely with manufacturers to reduce the cost of manufacture, and therefore also then reducing the cost of the comfort for the individuals within that building. So, that's how I find great success and advantage in what we have to offer and we are then sharing with other people as well.

So, how the Siemens factories are working in terms of decarbonisation is actually by sharing how you are manufacturing with other organizations?

The ability for referral, and repeat business. If we do a project for Diagio and were able to reduce the cost of making Baileys in that factory. We're able to bring that to St James's Gate and thereby reduce the cost of making a pint of Guinness.

We've covered all the different scopes, and I think there's definitely more that we could have spoken about, but what are the barriers? What is going to stop people from looking at the scope and taking the steps forward?

Across the board, if people lack knowledge and skills, they lack competence. So they feel nervous about doing things and don't feel that they know enough to bring everyone along with them and do the convincing, negotiating, etc.

There's a fantastic study by Global Action Plan, about the knowledge-to-action gap. Most people care about the environment, but most of them think that other people don't, when actually, if you realize that everyone on your team actually does care on some level about it, you can start taking action. Therefore, having a forum where people can post ideas, concerns, and brainstorm, they have the power to act without repercussions, and this is a really powerful way to build momentum within a company.

Everyone is busy all the time: it's a very busy workspace all the time, so, if you don't have time, and part of your priority is sustainability, find someone that does, and make it part of their role. Or, create a green team.

I had BT on a call recently and they said, you wouldn't believe what happened when we tied sustainability to all the senior management's bonuses. Linking it to people's job roles works.

Another statistic here, 80% of employees think that businesses should be a force for good, on some level, and over 70% want their job, to have a purpose that aligns with their values. So, there's this huge opportunity to make people more engaged with their jobs, more enthusiastic, and to capitalize on that spirit.

As we've mentioned, payback periods are coming down, but the main thing is educating businesses so that they know what it costs, what their savings will be, what the opportunity is, and how they can do it, then they can make more informed decisions. £15k for a ground source heat pump appears high, but if we then look at it in detail with someone who knows what they're talking about, it can be really helpful.

Climate change is overwhelming, it's a big issue, but don't get distracted by this. Focus on what's material to your business. You may not use energy on-site;

you may be completely online, so look at your website, at your digital carbon. Are your data centres using renewable energy, for example? Have they got their Scope 1 & 2 in order? Are you sending lots of unnecessary content which is using lots of data? Could you optimize your digital channels? Focus on the big wins.

Anthony, what about barriers from your perspective?

We do need to up-skill expertise in some of these fields as we're quite a niche industry in BEMS. If we can get remote access into systems, specialists can do a lot of work off-site, to help you look at the strategies that you are employing on-site and provide good recommendations. With any form of remote access to BEMS, we can do a lot of that background, work for people.

As Jane said, walking around a site is great, go at different times of the day, during the summer and winter. Establish little groups, and identify when the lights or the heating is on when it needn't be

Can you could just say one sentence about your final view of the whole subject? How would you summarize the capitalization scopes?

There's currently a fear of getting it wrong, by doing anything, but we will rapidly see that there'll be a fear of not doing anything, so, doing nothing is no longer an option, or won't be an option for very long.

I'd echo what Paul said, 'just start' We're all learning; it's one of the most rapidly developing science, and yes, just get started. Talk to people about it.

In Siemens, we use three terms: Measure, analyse, and optimise.

AD Collect your data, look at it, set some priorities, then go out and do stuff. The quicker we jump in, the quicker we will start making changes.

There are things that can be done. There are skills and knowledge out there. It's about starting, once you've set your ultimate sort of vision, it's starting to do something, even if it's just seeing if the lights are warm. Do we really need to sit at 24ºC? Turning down your set point to 19ºC may not always be popular, but this is a cultural change, as well as a change in terms of processes. I think cultural change is going to be the biggest thing,

Thank you to all our panellists.

A follow up to this Webinar "**Minimising the cost of Decarbonisation – Budget Considerations**"

will be held on Tuesday 7 March 2023, 2:30-3:30pm

Register here