

## CENSIS Conversations

### COP26 and climate change

#### Conversation transcript

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#### Gemma Milne

Welcome to CENSIS Conversations. CENSIS is Scotland's innovation Centre for sensing, imaging and Internet of Things technologies. Now the current situation around COVID-19 means that CENSIS has had to pause its regular events programme and find new online ways to engage with its community so while you may be unable to attend a CENSIS event in person just now, they found a way to bring the innovation centre to you via this online format.

So in this conversation, we're exploring challenges around climate change, particularly in the run up to COP, the United Nations Climate Change conference that's being held in Glasgow in November.

We're going to be discussing how decisions made at the Summit will affect businesses and organisations in every market sector and what they can do to respond.

We'll look at Scotland's mobilisation strategy for COP and at a local level, hear how Glasgow is getting ready for the Summit. And of course, as a thread running through these discussions, we'll explore how IoT, innovation, and collaborative partnerships can also be used to identify solutions.

My name is Gemma Milne. I'm a science and technology writer and researcher, and I'll be joined by an esteemed panel of guests for this discussion.

Everyone thanks so much for coming and joining us to chat about COP26 in there and what's happening in Scotland to do with climate change at the moment. I'm really excited about this conversation. Before we get into it, let's do a little round of introductions. Martin, let's start with you.

#### Martin

Hi I'm Dr Martin Valenti. I'm the Head of Climate Enterprise at Scottish Enterprise and I'm leading on the Enterprise Agency's work for COP26.

#### Gemma

Thanks Martin, Duncan.

#### Duncan

Hi everyone, I'm Duncan Booker from Glasgow City Council, where I'm currently engaged in planning to welcome the world and ourselves to COP26 here in Glasgow in November.

#### Gemma

What an exciting role Duncan. Thank you for coming and joining us and Rachael.

#### Duncan

Absolutely, thank you.

#### Rachael

I am Dr Rachael Wakefield, one of the Business Development Team at CENSIS, which is the centre for sensors, imaging and the Internet of Things and my themed areas within CENSIS are agri-tech and natural heritage.

### Gemma

Incredible, awesome, so what a panel we have today and we're going to be focusing a little bit on giving an overview of what even is COP26. Why are we having this discussion? And then we'll get into a little bit around innovation and what can be done here in Scotland and of course around the world. But let's start a little bit about what even is COP26? Why are we excited about it? I keep hearing that it's the most important COP since Paris in 2015. What do we mean by all that? Let's go to you Martin.

### Martin

I can mention Gemma why it's important since since Paris, but I'll first mentioned that it stands for the 'Conference of Parties' and as the name and the number would suggest, there's been 25 that have gone before.

The Paris one is interesting because Paris was the one COP of the 23 that happened before that, that focused on opportunity, so it spoke about 'what do we have to gain from tackling climate change?', whereas the previous COPs had been very combative in their format and they were about 'What do we have to lose to make the planet safe and green?'

So there was, what you eventually had, was, you were pitting the environment versus the economy, so it was a kind of false battle about if they have environmental success you're going to maybe not make too much money, or, to have economic success, we're maybe going to have to damage the environment.

But COP in Paris showed that that wasn't the case. In fact, it proved, beyond all reasonable doubt that the economic opportunity would only be valuable if there was an environmental outcome that led to wellbeing in communities.

You know, and for me the really, really important opportunity for Glasgow, and Duncan and Rachael will probably speak more about that in depth, is that this is the chance for us like we've never had before to really make our mark on the world.

And I know it's going to sound melodramatic, and I don't apologise for that, because this is our chance to show what we are capable of. Every country's got ambition, but capability is probably more important. It's easy to say it, but you need to do it. It's a very Glasgow thing. It's about stepping forward when we're faced with adversity. In fact, you probably couldn't ask for a better city in the world to have the most important COP at this exact time, because people do make Glasgow.

Now I know that sounds a bit cheesy, but if we don't step up and show the world that we are ready to be disruptive in our thinking and collaborative in our working and innovative in how we get there, we will never get this chance again.

So I'll just stop with the summary of: COP26 is the most important meeting that's going to happen on this planet. It's happening in the Dear Green Place of Glasgow. We all have a chance to make the case for Scotland, for the climate, and the environment and wellbeing being the same agenda, and I think that's really, really important. And last point is, Duncan actually said it - it's welcoming people to Glasgow to speak about the greatest economic and societal opportunity we will ever have. I cannot wait.

### Gemma

Amazing thank you Martin for that opening. And yeah, let's go to you Duncan then. Because of course this is a big deal for Glasgow. Tell us a little bit more about what it means for Glasgow, for Scotland and how that kind of intersects with the, with the aims and whatnot that you've already been working toward.

#### Duncan

Sure, thanks very much Gemma. I appreciate Martin's introductory comments on COP there. They give me a wonderful platform from which to leap and to add more.

I mean, I suppose the most significant thing I'm going to say, first of all, is that the arrival of COP in Glasgow here in November this year, is perhaps the point at which the world, and we in Glasgow in Scotland, look perhaps to recover from the COVID crisis which we had not foreseen and to address once more, the climate emergency which we knew to be looming upon us.

And Glasgow itself as a city declared a climate and ecological emergency in May 2019. We've followed that with some plans to try to address that in detail and reset our target year for achieving carbon neutrality to 2030, which is pretty ambitious and which I think places us amongst the vanguard group of urban peers around the world. And one of the key messages we're put into the world is, that whilst nation states make pledges, it's **cities** that are delivering on the promise of a low carbon and climate resilient future, be that in New York, in Los Angeles or Glasgow and Amsterdam and so on.

The other thing I'll say is really significant for Glasgow as host - you can see COP under two slightly different but related guises. The first is as a really big event that's coming to Glasgow, and Glasgow has form on this kind of thing. We're good at managing really big events - from the 2014 Commonwealth Games all the way back to being European City of Culture. This is part of a narrative of a host city that does these things well, welcomes the world really impressively, as Martin said, and wants people to come back and induces them to do so.

That's really significant. But of course COP26 is also an event with meaning, content and intention, and it links very closely, I think therefore, to the current ambitions we have here in Glasgow and Scotland, to create that low carbon future for economy and society, with social justice at its heart as well. And I think that's a really significant thing as we look to really have a transition towards a greener future and also to play our part in the planetary conversation about how social justice works around the world too, looking at Glasgow's own past in terms of our industrial role and our role in the British Empire of course, as well as our future as a leading city amongst our urban peers

#### Gemma

Well, actually, before we do go on to and start to talk about what these, you know, we're talking about action and intention and capability. Before we get into that – and obviously, of course, the challenge is, the big question of course has been looming is – is this event is going to happen physically in Glasgow? You mentioned the COVID crisis that we've been going through. Not till November, but there's still a long way to go. Tell us a little bit about what's happening there Duncan.

#### Duncan

Sure Gemma, that's a perfectly fair question which many people are often putting to me. Definitely, the answer is yes, it will go ahead. And when it was postponed last year, I think one of the key things that our partners around the world, when consulted amongst the nation states and their global gatherings, what they said to the UK host Government and to the United Nations was that COP is best delivered and most likely to achieve success when it's face-to-face negotiations, when it's people talking about the issues that matter and seeing if we can find a resolution to some of the challenges we face.

And therefore the planning currently still is, that we will have an in-person COP in November this year here in Glasgow, that we will welcome the world.

Having said that, it is of course the case that the host UK government is looking at different COVID scenarios and what that means, and we are all mindful too that in fact public health is a devolved responsibility to the Scottish Government and that we need to take into account how those scenarios move across the months to come.

But at the moment, we're planning for an in-person COP, and of course we will, with due safety and concern for the involvement of everyone, look at potential opportunities to use media such as this one and other digital platforms to enhance the in-person conversations that are absolutely necessary to achieve the success we want.

#### Gemma

Duncan, I want to ask what may seem like an obvious question to us that are kind of working in this space, but I think we don't talk about enough or are not clear enough about it. It's this concept of net zero targets and even just the concept of net zero at all? What is it? What are these targets? Why are there different dates seemingly for Glasgow than Scotland and the UK, give us a little bit of context around that.

#### Duncan

Thanks, Gemma, I'm going to try not to get too technical and not answer it in too great a length, but there's a need to for a bit of a discussion in some technical aspects here.

The first thing to say is that some of the targets that people will have heard of around carbon neutrality and net zero, and I'll define them in a second, were set for the United Kingdom and for Scotland by something called the UK Committee on Climate Change, which is actually chaired by sorry, whose chief executive is actually a Glaswegian and it independently advises the UK government and the devolved administrations across the United Kingdom and also assesses their progress towards some of the targets. The targets that have been set are as follows:

For net zero:

2050 for the UK

2045 for Scotland

For carbon neutrality:

2045 for the UK

2040 for Scotland

That sounds like Scotland's making much greater progress and has much more ambition, but actually it's a recognition of the geographical reality of the Scottish land mass, which is much more able to take, for instance, peatland restoration for afforestation, reforestation and become a carbon sink. But it also does recognise as well, of course, that's Scotland's made great strides in terms of decarbonising electricity through renewables.

Now if you look at what they mean, carbon neutrality is the first one I'll maybe focus on, because Glasgow has set a 2030 date for achieving that in comparison to 2040 for Scotland, which I would argue shows how cities are very much driving the change and leading the way and that Glasgow's success will be Scotland's success on a national level. Carbon neutrality refers to the point at which your carbon dioxide emissions are reduced as much as possible, as close to zero as possible, and any remaining emissions are really offset or negated by storage, forms of offsetting or sequestration, particularly by natural means - peatlands as I mentioned.

Net-zero refers to that point which all greenhouse gas emissions - that's carbon dioxide, but other ones, such as methane (which is particularly associated with agriculture), sulphur dioxides, and nitrogen dioxides, and so nitrogen oxides, rather are also set at that point where you've minimised their emissions as much as possible and either offset, stored or sequestered them.

Carbon dioxide represents, from memory, about three quarters - 76% of all greenhouse gas emissions, with methane being 16%. The problem is that they have different effects in the environment, methane

being much more dangerous in terms of the global warming component it brings. But essentially, if you can reduce the emissions as much as possible and then deal with any remaining ones by different means - and there's lively public debate going on about the extent to which you plant as many trees as possible, or you actually have, you basically take the CO<sub>2</sub> from the power station, put it back into the ground when it comes out, that's how that's how these different targets refer.

There will be a lot of debate about what that means for particular institutions, what that means for particular areas like Glasgow and Scotland, but essentially it is about reducing as much as possible and then dealing with any remaining emissions and Glasgow's target of 2030 for carbon neutrality compares to one for 2040 for Scotland.

#### Gemma

Awesome. So let's talk a little bit about, I guess, the need for innovation and the need for everybody to kind of get involved with this event. This is not just a political event. Businesses, the public, various different, you know, high level plus local government will all be there, will be representing.

Rachael I would love to come to you. So just give a bit of context around when we're talking about innovation and collaboration and kind of moving things forward. Talking about these huge big challenges, what does that look like? What does the need for innovation look like? What are, the kind of I guess, areas of focus that you're looking at? And how do you facilitate beginning to try and get everyone working together on such huge global problems?

#### Rachael

I think really from my point of view, many of the technologies are there. They are out there and it's really the will and the opportunity to bring these together, to implement them to make an impact, and I think one of the things COP will do is provide a platform really to bring communities together. Because I think typically you know, the science and technology in the innovation area is seen mainly in a one way direction. You know coming from science into communities and citizens, but certainly over the last two, three, four years, rising Citizen Science and open data platforms and the opportunity for community projects such as the low cost air quality sensing networks that are global now, and the ability for low cost technologies to be used by communities to gather data to gain more information about the environment and the impact of activities within their local areas.

#### Gemma

Incredible and Martin. I'd love to come to you to kind of hear a bit more about that. You know when we talk about the technology's available, we just need to kind of shall we say, get going, get collaborating, get making sure that we're implementing technology in a responsible, sensible way that's equitable for all.

What - is this part of the discussions at COP, or is it about creating plans and actions, or is it about getting people just to have meetings. What's the role of COP then in order to actually, I guess, take this capability and really make it happen? We talk a lot about climate change. It's really about now actually trying to sort things, right?

#### Martin

It's probably the most important question I think that needs to be answered because up until now, and this might sound a tad provocative, I don't mean it to be, but since we discovered 50 years ago that man's activity was having an impact on the planet, what our approach was, 'well, we need to stop that happening', and we've done awfully well at that. So we got a lot of agencies and governments and businesses saying, 'right, that's a bad thing. Let's circle the wagons to stop that happening'.

But you need pioneers from time to name. Some time you need a nation to say 'you know what, we know it's tough and it's going to be challenging, but we can't stop now'. There is never going to be a vaccine for climate change like COVID, so we're going to have to think big. Act boldly. Work

collaboratively, be innovative and the only thing in my personal view that brings people together is hope, not fear. Fear paralyses, hope mobilises. So if you've suddenly got the chance of success, the vision of the future, the prosperity narrative made clear to you, people think 'well that's where I'm going. That's what I want to be'.

There's very little point in society, not just Scottish society, but society, incrementally improving a system that didn't work for them in the first place. What would be the point of that? And a lot of people speak about 'build back better' which seems quite alliterative, a cool thing to say - but it's real, because if we ever get a chance to do 'Control Alt Delete' on our way of life, COVID is saying 'Have a look again at how you qualify success. What's important for you?'. Rachael actually mentioned the point earlier and it was really, really important is that we're now, because of COVID and the restrictions, we're valuing things through a different lens, what's really important to us.

Nature has come up time and time again as something that people really feel connected to and we saw some of the brilliant scenes when towns were empty and we had, you know foxes and deer and all sort of stuff running through the city. And that looked really lovely and it was great for the TV and media, but there's a narrative I think, that Scots need to be showcasing at COP, which is 'we're all together'. Not combative like some COPs, you know, 'it's the environment, it's the economy'. No, we're not going to do that because, I'm not a military expert but combat leads to casualties. Why would anybody want casualties in an already challenging environment? We live under a time of volatility, uncertainty, ambiguity and complexity.

But the one thing we can be certain of is that we know what the future looks like. The future is lean, it's mean, it's green, it's prosperous, it's nature-enriched. Everyone is getting a rise from our ambition to do stuff, and I'm getting to the point here a bit slowly, is that if we do not sell the hope from tackling climate change, we will be managing the fear.

#### Duncan

One thing that's become obvious to me is that climate change as a science is so difficult, so abstruse, and so opaque that it can sometimes drain a sense of agency from people on an individual basis, perhaps even on a national governmental basis. It's just all too difficult. It's something to do with the system. What can I possibly do? Why do I even bother recycling if it's so difficult? And we need to give people back a sense of agency, a sense that they have power and authority, a sense that actually this is partly an issue of democracy as much as anything else.

And sometimes in my view, from my experience recently and the arts and cultural sectors are as well doing that as perhaps the more natural scientific explanations of what's going on and I go to therefore to what Rachael said about innovations with low cost local sensors as well. You know, that gives people on a neighbourhood basis, the opportunity to see what is happening to their air, what is happening with the emissions coming out in their part of the world. And it also gives them an advocacy tool to take to people like me and to give public policy people like me a good kick up the rear if necessary. It's never a comfortable experience, but it has to be part of that conversation where data is open, conversation is going on and as Martin said, one of the great things we want to tell the world about when it comes to COP in Glasgow is that, you know I wasn't born here but I've lived all my adult life in Glasgow, this is a robust disputatious local democracy, and that's a really positive asset to have. And that's the difference between a resilient city and one that's going to find itself really struggling.

One final thing. It's not a quotation from me, I'm borrowing it from others, but many COPs are somewhat anonymous. As Martin pointed out, COP 21 in Paris in 2015 was really on the edge of the city in an industrial zone with lot of security. You'll have seen the Eiffel Tower in the distance, but you wouldn't have got much of a Parisian flavour of things.

COP26 in Glasgow at the Scottish Event Campus is almost city centre by any previous standards and so we want people to be able to put as it 'kilt on the COP' to give people a sense of place that you are in Scotland. And for those of you who know Glasgow, going to Exchange Square, even put a [cone on the COP](#) and really give it a [gallus](#) local flavour.

#### Gemma

And that's actually going to lose you nicely into my next question, Duncan because it was going to be - What does it look like in terms of getting people involved in COP? You know, citizens of Glasgow? So not just the people coming to Scotland and getting a flavour for what Glasgow and what Scotland's about and what that spirit's about. But for people who are local, whether it's businesses, citizens and perhaps even people from other parts of Scotland that want to be a part of this and work out what they can do?

#### Duncan

Taking businesses first, and I know that a lot of the listeners to this are going to be from SMEs, particularly, so for us, the key link is through the Glasgow Chamber of Commerce and working with our friends there. They are particularly looking at circular economy work, which they've been pioneering and offering a space in what we're calling a 'Host City Zone' of the City Chambers in Glasgow for the best of Scottish and Glaswegian businesses to really foreground and highlight what they're doing to do show and tell for instance and maybe even to get further export trade.

There will also be obvious opportunities in the formal COP -Blue and Green Zones as they are called - but as host city we really want to work with Glaswegian businesses and to push what both Martin and Rachael have referred to as that green recovery, to make a reality out of it rather than a bullet point forever consigned to the world of the PowerPoint screen.

More significantly of course for communities, we're really keen to have a civic conversation about climate and carbon. We want COP to add momentum, we want it to add a shoulder to the wheel of our current ambitions, but it can't be a one off set of conversations with communities leading up to COP, so on the 13th of November, when COP leaves Glasgow, has left Glasgow, we want that to be continuing. So, to give you an example of what we've been doing: Just last week, we finished a series of community consultations on our draft climate emergency implementation plan. We want to be doing more of that with our community planning structures on the ground with our people. Obviously, at the moment through media such as this, but eventually back in person in community venues to talk about what these mean, how they matter to people and how actually all these fancy plans and strategies that people like me issue, have traction and meaning in people's lives. There's going to be plenty of opportunities for that.

#### Gemma

Amazing and Rachael, I want to come to you then to talk a little bit about what projects are actually underway now, to start thinking about advancing efforts to decarbonise. Because of course, if we're going to be talking about big plans at COP, we also need to be discussing what's already happening and how other people can learn so you know, bearing in mind Glasgow set this big target to become a carbon neutral city by 2030 and is ahead of many others in that respect. What's happening in Glasgow and in the surrounding area in terms of projects that are underway to advance efforts to decarbonise?

#### Rachael

So in terms of decarbonising, one of the biggest impact is vehicles and fossil fuel vehicles. So one of the things that the Internet of, one of the first applications of the Internet of Things technologies has been in optimising route planning around things that require service vehicles or maintenance vehicles.

So I think one of the most widely spread one is refuse collection. So by understanding you know which areas need support, need maintenance around bin collection for example, by knowing how full a bin is, you can begin to optimise your route and take preference of areas that require more frequent uplift, and leave aside the areas that that don't need visiting. So reducing you know the emissions in in certain

areas, optimising your fuel use and certainly, where you can switch over to electric vehicles as well, that becomes even more efficient.

I think, personally, that just looking back into the impact COVID has had, the pandemic, the impact of the pandemic is around, I think, one of the biggest impacts must be the commuter and the vehicle use. Certainly working from home, we've all seen that it's possible to reduce, many of us have seen it's possible reduce the amount of time that we spend in the vehicle to commute.

#### **Martin**

I mean Rachael mentioned some of their individual projects, about transportation and so on that's going in the use of technology and the Internet of Things but I think within the context in Glasgow, for example, there's a lot of strategic work going on with Glasgow City Council partners and other local authorities.

I mean, it was something I should have mentioned earlier, Duncan's city's hosting the party but all of Scotland's welcome. You know, so if you've got your stories to share about Aberdeen and south, Dumfries and Galloway, all of Scotland's keen to showcase their capabilities, I think that would be, that's another good message to get out there. So that strategic partnership's really important and if you think about Glasgow, you've got the Clyde there. Everybody knows about the Clyde, 'Clydebuilt' means something to people. Everybody's either got a cousin or their grandad, my dad worked in the shipyards for example and my wife's great, great great grandad sold a ship out of here back in there you know the end of the 18th century, so there's so much connection with the Clyde. And the Clyde helped Glasgow develop its identity and its society, though the Red Clydeside, there's been so much about the Clyde that shaped Glasgow. That is potentially a major economic opportunity for solving climate emission problems – you can take heat from rivers, you can do all sorts of different technologies, having a river at your disposal. And I know Duncan and Glasgow City Council are leading this Clyde Mission Group involving a lot of local authorities, so they'll be big strategic partnerships happening. And I think when people are in Glasgow, they will get a sense that this isn't a siloed, fragmented approach. This is all of Scotland coming together to showcase all of the things we do in all of the ways we do

#### **Gemma**

How will businesses play a role in tackling climate change? And how could IoT and innovation play apart, particularly in the industrial sector?

#### **Rachael**

I think one of the one of the key things that that would be really helpful is to enable businesses to reduce power, power usage. For example, many businesses might be renting accommodation and they have no control over the use of power, the heating or the temperature that might be used to heat the building and it's things like these that could be really impactful and enabling businesses, particularly those in rented accommodation, to be able to manage their own energy use. And certainly one of the biggest areas for the Internet of Things application that we've seen over the last five years is business management systems and the rise of people really interested in retrofitting sensors into workspaces to understand space use, energy use, even simple things - whether a light's been left on or not, how many people are occupying a room at any one time, and how often is that room utilised? And the temperature in the room and just the comfort of the climate in the room as well. So, and simple things like that you know can help people manage their own energy use.

And I think as well, certainly several businesses we've spoken to, particularly during the pandemic, has made businesses step back to actually look at their building use. You know, how many desks are actually occupied at any one time? Do we really need this, this square footage?

But one of the other things, I've been looking at my own personal foot carbon footprint during during, well, we've been working from home over the last several months and I'm not driving anywhere hardly, everything is local. I am really trying to reduce my / how much I consume but my carbon front footprint



is still quite large and it's down to one thing and it's the central heating - gas central heating, so that really surprised me. And you know, it's made me think about, well, how can I reduce that? And there's only so much I can do personally with the tools I've got and the services I get, so there's a role in there, is it the infrastructure and policies to help businesses and private individuals to reduce energy.

#### Duncan

I think the answer around innovation is an interesting one. When we talk about innovation, understandably, we tend to think of technology. We hopefully will see innovations in laboratories helping us move beyond the COVID crisis through vaccinations and on a climate level, as Martin's said, unfortunately there is no such inoculation against some of the challenges we face and therefore the innovation in my view is as much about how you bring financial instruments to bear, because as Rachael said earlier, many of the technologies are on the shelf, we but we don't know how to get them off and mobilised to scale because of the issues of finance. So we can always come on to that one. I think it's going to be a big issue that everyone's going to discuss at COP, and people like me naturally will go to the Scottish or sometimes UK Government, you know, asking for the cheque book to be opened. We will of course continue to do that because it's understandable.

But we need to think more innovatively about what that means. So if you take, for instance, Denmark and the oil crisis of the 1970s, when it first established its extensive district heating system, they issued low, low, low cost, long range municipal bonds. Now that may be something we need to think about working with financial institutions. The other form, I think, of innovations around governance and goes to the heart of your question, Gemma, because if we all agree on this and yet nothing is happening as rapidly as we would like, and as we all know, time is running out in terms of keeping temperatures below 1.5 degrees centigrade increase on a global level and doing our local bit, then what is it that we haven't managed to do? How do we interrogate our current environment in terms of the setup of the institutions we have and I think that goes to the heart of the issue.

And in Glasgow the answer that we've given is to establish a partnership called Sustainable Glasgow, which is chaired by the Leader of the Council, which is really important because political leadership matters and there's a democratic mandate that goes with that, and we bring together partners like the universities, like the private sector, Scottish Enterprise and so on, and Scottish Power, to work with us, to see if we can do these things because one thing is for sure - while people like me use the word 'partnership' in an often and, you know, glib and constant sense, actually, the answer to the question lies in improving the ways in which we mobilised the partnerships we already have, the assets we have close to hand, and there's a story there, I think for Glasgow as well.

There's a reason why we became an industrial titan, and that's because we had all the, we had the iron ore and coal and labour, but we also had innovative businesses and a great University on our doorstep. Those same assets - innovative businesses and the town and gown relationships are the ones we need to mobilise and draw upon to get us out of - out of the challenges we face, but also to set sail to a much more positive and much better future, in which we create well paid jobs for young people coming through schools - and liveable neighbourhoods. And that's one of the, maybe things we want to retain after the COVID crisis as well as Rachael said that access to green space, as Martin said, the sound of nature in our cities once more.

#### Martin

Duncan got me thinking there - it's about this How do you mobilise Team Scotland? What's the narrative? The narrative - and we've got a Team Scotland Business Mobilisation Strategy and it's dead simple. So it's based on three key areas and I think it would be useful for your listeners to know this:

One is **net-zero transition plans**. These are going to be spoken about, they're going to be talked about. A lot of businesses are going to come to COP and the Green Zone, and showcase what they're doing because they're trying to encourage the Blue Zone (so the Blue Zone are where governments and

ministers meet and the Green Zone is where the world comes - businesses, academia, civic society and so on and so forth). And if you create this ambition loop, if you want to use that term or maybe use a diagram, an 'ambition loop' is on the Green side.

The blue / people in the Blue Zone are going I wonder if society is ready for us. Do we understand with investment opportunities? And on the Green Zone we're saying 'well here it is, here's what you can do when you mobilise a group of people'. So we want to mobilise under net-zero transition.

Why? Because that is the Spotify of the Blockbuster world. At that point I mentioned earlier why would we try to incrementally improve over a long time a system that didn't really work for everyone. So we need to be a bit disruptive but disciplined so the net-zero transition plans in a **Just Transition** – that's really important, because we don't want to throw the baby out with the bath water like they did back in the 70s and 80s with the coal sector.

Some people ask me what's a Just Transition? I'll tell you about an Unjust Transition is - if you drive to some of the former mining, coal villages in Scotland - and I grew up in one - that's what an unjust transition means - social, economic, environmental decline, intergenerational unemployment and so on and so forth. So we won't do that again. So we need to make sure that we work hand in hand with sectors who are still stuck, you know, with oil and gas and certain parts of landfilling and so on. We need to make sure we work closely with that sector to help transition them.

And the last part is that how do those two approaches set us up for **investment**? Investment is critical. The public purse is not able to fund the sort of level of transition. And Chris Stark is the Committee of Climate Change Chief Executive – a Glaswegian, there's a theme here! And Chris said that in his recent scorecard for Scotland was 'You're doing okay. In fact, you've done really well. You've cut your emissions faster than most countries in the G7 in the last decade'. And we smashed the targets we set ourselves for interim targets, of 42% percent, we're sitting about 50, 51. So that's amazing. So that gives us the confidence to think, well, maybe we should do more. So the last point is Chris Stark says you will need billions of pounds into your economy to transition to be a sort of net zero economy, and you can do it faster than the rest of the UK. That was what he actually said in his report.

But – and this is the challenge for us all here and this is why we need this collaborative opportunity-focused mindset - is that private sector needs to be enticed into the low carbon arena and you're not going to get the private sector to invest in concepts or to address problems. They will want to explore opportunities. They will want to invest in the future. So I think the narrative needs to shift from circling the wagons to being pioneering, and I think Scotland is the best country in the world, and Glasgow, the best city within the country in the world that's going to be able to do that.

#### Gemma

Thanks, Martin, I think that's a nice way to kind of bring us into the final sort of section of his discussion, and I want to bring us on, which is around, you know that vision and what that future looks like. And we talked a bit about the narrative, but maybe get into a little bit more about the detail about what that looks like in practice, you know? What could Scotland look like in 2045 if we all take action? What does it look like from a business standpoint, to not have to be enticed into doing something that doesn't feel like an opportunity? But what do those opportunities look like if they're to take action now.

#### Rachael

I think collaborating on things like supply chain, materials delivery, optimising delivery routes, sharing resources where, you know, in the last mile delivery for example, or longer distance. I think it would also be nice to see the circular economy being applied in practice as well. For example, electronics, electronics recycling, modular products where parts can be replaced and so you don't have to completely ... parts can be replaced and repaired and there's a there's a whole support supply chain around that.

### Gemma

I guess what it sounds like what you're saying, as well as from a business perspective, it's not just a case of having to cut back, but actually, you know investing a little bit now to actually save quite a lot moving forward, whether that's through efficiency or different kind of products, perhaps that can be created, and by utilising the kind of innovation technology in front of them.

### Rachael

Yes, the Internet of Things, some of the biggest impact of that is saving time. So where you can reduce the need to go out and collect data, where you can receive data from remote areas and also apply machine learning and artificial intelligence to give you a prediction of when you might need to make an investment or when you might need to make an action, and certainly, that that helps to make everything more efficient, both in terms of time and resource, used in those things, and I think we're beginning to see now the first applications of machine learning to apply predictive maintenance and repair activities, and these become important when you consider big assets such as, you know, wind turbines, wind turbines offshore. You know it's actually being able to make the best, optimum programme for repair and maintenance of those types of really large assets.

### Gemma

And Duncan, let's go to you to hear a little bit about that, I guess the vision, perhaps specifically for Glasgow, considering everything really is being centred around Glasgow at the moment. What does a Glasgow look like in 2045 if we all, businesses, individuals, government take action?

### Duncan

Thank you, it's a lovely question and it's in a way I want to / there's two sides of the carbon coin I want to relate to.

One is the one we perhaps been focusing on, which is decarbonising our economy and society in particular. We have challenges around heating, with our transport, which has not reduced its emissions as much as we would have liked here in Glasgow, or indeed across Scotland, and therefore the future Glasgow, which we're growing now has to be one in which decarbonised transport is core, where we retain perhaps that small silver lining from the huge leaden cloud of COVID hanging over us where people have become more active walking and cycling and maybe offering more space for that, just as we have in Glasgow.

And where we play our part as a council where we are purchasing. Rachael mentioned about refuse lorries, we're purchasing 19 hydrogen powered bin lorries and a hydrogen fuel facility here in Glasgow to show that we are willing and we are committed to decarbonising our Council fleet of over 1,300 vehicles by 2029.

The other side of the carbon coin which we haven't really perhaps focused on so much, is what we might call climate change adaptation - how we deal with the now inexorable local weather impacts of global climate change, and for Glasgow that means I'm afraid to say, even more, even more rainy downpours.

You might see milder winters and that sounds strange today, but you might see milder winters which will help people not have to put their heating on so much, but all of it shows we're going to have perhaps more issues around managing surface water in a city that hasn't had its problems to seek there. So for me, one of the key issues that you will see a city that's much more adapted to that, and is using particularly what we call nature based solutions. It doesn't have to be building walls and pouring concrete, it is about using nature to store rainwater, to take the pressure off what we call the subsurface Victorian infrastructure of the sewer network, for instance.

And just if I can bring those together Gemma with a geographical example. I'd recommend to people if you go to Calton, Bridgeton, Dalmarnock, Parkhead, what's called the Clyde Gateway Urban Regeneration Area, which swings into South Lanarkshire. If you walk down from Dalmarnock station, you will see what called 'swales', parts of a developed piece of infrastructure which deals with surface water run off and begins to absorb it and keep it from going into the subsurface too quickly and overwhelming it and you'll then see that right now a district heating system being put in. And you will also – well you probably won't get to see this - but there are boreholes in that area looking at trapped water from mine workings to bring heat to the city from that. In other words, using what is normally seen as a problem for the city and turning it into an asset, and fundamentally when you're in the Clyde gateway area, you're seeing still, the scars of previous industrial usage and vacant and derelict land being brought back to the market for housing and offices, and crucially, a really strong commitment to getting local people into decent paid jobs.

I think all of that brings together the aims we've got of places that are really worth living in, places that are worth investing in, and places that really deliver for the people that live there. And for Glasgow, I think that's above all else, a lesson we can help to teach the world.

#### Rachael

Picking up on that, Duncan, some of the projects that we're involved in just now is a large scale roll out of sensors using [Scotland IoT's network](#) which enables us to put sensors out in very remote areas and one of the biggest programmes that we're going to see over the next few years is water level monitoring and natural surface waters and rivers and streams and contributors, not just by SEPA, but also by Scottish Water and local communities. And I think looking forward we'll have, I think, one of the most comprehensive sensor networks for not just river level monitoring throughout Scotland, but also soil moisture as well, which is closely linked to soil saturation and your additional surface water, and that's certainly very exciting because you can link into that kind of environmental data set with other information such as local climates, microclimates, and agricultural, agricultural data as well, and you begin to build up a really big database about Scotland's natural capital. And if you provide some of that on an open database, then in the future we can really begin to understand the environment and build up resilience to changes that are going to be made to the climates we go on as well.

One of the really exciting things that we're seeing now in the Internet of Things Technologies and sensing is the ability to really apply large scale sensing of the natural environment. Up until about maybe even two years ago, it would have been quite difficult to deploy as many sensors that that we are able to.

So certainly for us, I think we've been leading in Scotland in these environmental sensing, you know, really large scale applications and you know the more that we can put that data into an open database as well to, for use, for evidencing offset, evidencing biodiversity, whether it's in vegetation or animals or land management practice, then you know we really, really have a rich resource of data to help us in you know, meet those targets.

#### Gemma

And Martin and I want to ask you a slightly different question then sorry, you're not getting the 2045 what's Scotland look like. I want to ask you then, based on, I guess what Duncan and Rachael have said about the fact that you know there is a lot of projects going. There's a lot of planning happening. There's availability of systems, of data, of technologies. Your vision, the future, maybe let's do a little bit closer. What's your vision for December 2021? COP's just happened. What do you want people to feel? What you want people to do more so and what do you feel it maybe is there going to be a capability for folk to start actioning this stuff of the back of the back of COP26? Give us a little bit of that vision.

### Martin

Brilliant question, I'll answer the 'what do I want people to feel?'. I want them to feel that they've been part of this, I want them to feel they've been part of the success, because as Duncan mentioned in previous COPs, there's a bunch of people in suits in the Blue Zone speaking about how challenging and difficult things are and what are the public going to stomach, if I do this decision, made that decision, so actually, maybe I should just retreat to a safe space. We can't have that. We just can't have that.

This is why this ambition loop is critical. We need so much hope and opportunity and optimism in the Green Zone, so that the Blue Zone think, you know what, let's just go bigger here. This is the time to do it. And this seems to be the people who want to get on with it.

I want people in Glasgow to feel proud that they were part of the greatest ever COP and the legacy for me isn't just about 'we've sorted COP', it's that we've left the legacy for COP27, which is going to be in African nations.

I can't stress enough - collaboration is the top thing. Scotland needs to be this 'collaboratory' – I just made that up - this country that leaves its gun in holsters at the door and doesn't come in with 'here's what I think's important'. It's 'what do you think's important? How can I help you get there?'

We will be pushing an opportunistic, forward thinking, progressive agenda, not circling more wagons and creating more regulations and creating more hoops. Because as the other two panellist members have said time and time again, we have everything we need at our disposal, we just kind of need the will to get on with it. And we've created – **we've** created climate anxiety in our young people. That's just shameful. But you know, never before have you had a mass group of young people who feel dejected by, you know, we've let them down and they're trying to find people to blame and they're right to do that. But for Scotland, for Glasgow, we need to now start to pull people together rather than push them apart, not point fingers at who to blame. Find people who to work with to help, so 2021 December, I will be 60, there you go. I'll just got out there, I've just confessed. Wouldn't it be great on December 15 my 60<sup>th</sup> birthday, we all get back together in a party somewhere and toast the fact that we were the ones who held the line about hope. We were the ones that brought the collaboration together and we were the people that gave African nations an absolutely fantastic framework from which to deliver a very successful COP. So I'm a total optimist. I always have been and maybe I'm a prisoner to hope. I don't know what it is but I feel that if we start to go back into our silos and try and have fragmented approaches towards the greatest challenge and the biggest economic opportunity of our life, we will regret it. So let's make sure we don't do that Gemma.

### Gemma

That's a lovely note to end on. I think one of one of hope, and one of opportunity, which of course is the plan for COP26 here in Glasgow this November.

Duncan, Martin, Rachael, thank you so much for joining us and taking us through what is actually just a very exciting year ahead. And I can't wait to see what Scotland manages to do and what Glasgow manages to do in November, representing the world in terms of climate change. So thank you so much for joining me here today guys.

### Rachael, Martin, Duncan

Thank you.

### Gemma

Thank you very much for joining this conversation. If you enjoyed what you heard, or you have any further questions where you think CENSIS may be able to help, perhaps an idea for the development of a product or service that might address climate change or you have a challenge in this space that you need help with, please feel free to reach out to CENSIS by visiting the website at [censis.org.uk](https://censis.org.uk), where you'll find all the information you need about how to make contact. Thank you very much.