SEDA

COP26 Glasgow

SEDA Members Prepare

The Scottish Ecological Design Association magazine

Summer 2020

£3.00

SEDA

SEDA was formed in 1991. Our primary aim is to share knowledge, skills and experience of ecological design. SEDA is a network and links those seeking information and services with those providing them.

SEDA's membership is made up of a large number of people involved in, and with an interest in design, principally in Scotland. Members include academics, architects, artists, builders, planners, students, ecologists, landscape designers, materials suppliers, woodworkers, and many more whose work or interest is concerned with design for a sustainable future.

SEDA is a charity and is run by a Board of Directors, who are elected at Annual General Meetings. The Board is advised by a voluntary Steering Group which meets 8 times a year for discussion and for planning the activities of the Association. All members are welcome to take part in these meetings. SEDA registered as a Company Limited by Guarantee in February 2011.

A SEDA membership is a great way to support ecological design in Scotland. As a member you will receive the SEDA Magazine for free, get discounted tickets to SEDA events and the opportunity to connect with a wide network of talented designers. Our upcoming events can be found boxed in green throughout this issue.

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Editorial team

Nick Domminey and Viktoria Szilvas

With thanks to all our contributors, sponsors, and supporters.

What do you think of this SEDA magazine? Do you have any disagreements or something useful to add to the issues covered? Do you have an idea for an article? Drop us an email at magazine@seda.org

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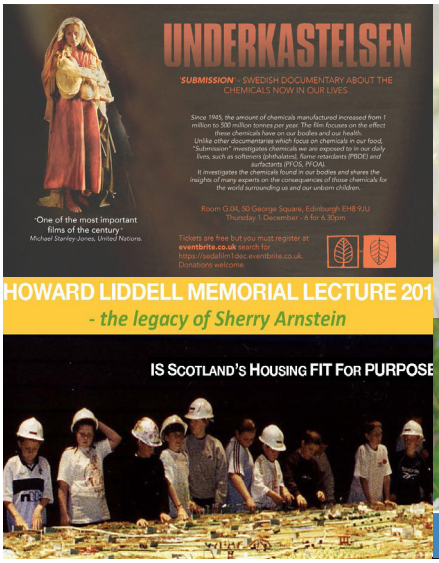
Opinion

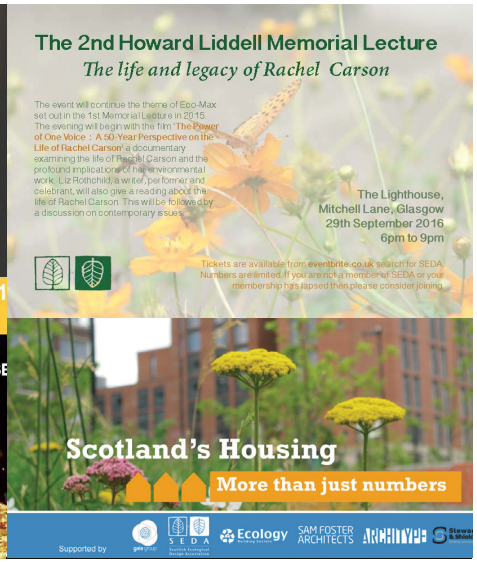
Editorial

Sustainable SEDA

Nick Domminey

Only a few months ago, when we decided that the SEDA Magazine Summer issue should concentrate on the imminent COP26 in Glasgow, coronavirus was a disturbing piece of news from a distant land and the "green movement" was panicking about being prepared for November 2020. We sent out the call to long-standing SEDA members and others to explain what they wanted from the most important climate conference ever. As the world sank into lockdown, we wrestled with changing the focus to the ecological impact and opportunities presented by the pandemic but decided a) that the crisis was far from over and b) now that COP26 is postponed for a year, it is still a good time to take a long view on what is needed. Hence the current magazine.





SEDA

COP26 is about targets, so we are delighted that the great environmentalist, George Monbiot, has allowed us to reprint his January 2020 cautionary piece about their uses and dangers. With the launch of Common Weal's Common Home strategy for a better Scotland and its pandemic follow-up, we have its director, Robin McAlpine, presenting a viable vision and how we could realise it. Richard Atkins- an ex-chairperson of SEDA-, sets the scene for demands on COP26, while SEDA founder, Sandy Halliday, creates an overview and roadmap, post COP26. We have long-standing SEDA member, Sam Foster, with his background in housing, describing a strategy particularly for refurbishment to achieve the much vaunted "zero carbon". Landscape architect Nick Bowen, however, looks at the importance of biodiversity, often missed in number-crunching around the big "C". As well as strategic thinking, we have specific demands on UK COP26 commitments: architect and author Chris Morgan and his colleague, Claire Coquette, explain the importance of estimating and limiting embodied CO_2 in construction; Scottish Solar Energy Group remind us of the importance of the solar technology in tackling the climate emergency; Barbara Jones, distils her lifelong experience building with natural materials into clear demands for plant & nature based materials and training; while farmer, Sue Manning, responds to a previous SEDA Magazine article questioning livestock agriculture with her vision of regenerative farming.

This would not be a SEDA magazine, of course, without accounts of our events, our members' projects, interesting related subjects (Professor Gadd about uses of fungus), a SEDA Solar building visit, Students activities and Sustainable Thoughts from Scottish RSPB Head of Habitats, Paul Walton.

Finally, we are delighted to announce that SEDA members can now login to our growing library of videos, articles and documents that draw on SEDA's past activities. www.seda.uk.net/resources hosts downloadable SEDA Guides and magazine back issues, along with many other resources for free. If you missed out on any of the Howard Liddell Memorial Lectures, for example, or last May's conference on Scotland's Housing: More Than Numbers, you can now watch and hear the events themselves! Also, look out for further bulletins & social media posts as more videos and articles are added. ■

The Most We Can Do

Do targets hold us back?

George Monbiot

George Monbiot

Climate targets seem sensible, but are actually impeding effective action. Let's do something completely different.

The crisis is not imminent. The crisis is here. The recent infernos in Australia, the storms and floods in Brazil, Madagascar, Spain and the US, the economic collapse in Somalia, caused in part by a devastating cycle of droughts and floods, are not, or not only, a vision of the future. They are signs of a current and escalating catastrophe.

This is why several governments and parliaments, the UK Parliament among them, have declared a climate emergency. But no one in government acts as if it is real. They operate within the old world of incremental planning for a disaster that has yet to arrive.

Nowhere is this clearer than in the reports of the Committee on Climate Change (CCC), the official body that began with such hope and promise of holding the government to account, but that has now abandoned scientific realities in favour of political priorities.

Its latest report, on changing the UK's land use, is so unambitious that, in some respects, it would take us backwards. For example, it calls for a 20% reduction in our consumption of beef, lamb and dairy – the most carbon intensive foods – over the next 30 years. But it admits that this is a smaller reduction than is likely to happen anyway: there has already been a 20% decline in the consumption of these foods over the past 20 years, and this shift is accelerating rapidly. Cultured meat and milk could replace these sectors almost entirely by 2050.

The report makes no mention of rewilding or natural regeneration. The only means it proposes by which trees should return to the land is planting. This is often a slower, more expensive and less effective way of restoring habitats and sucking carbon out of the atmosphere than removing livestock or controlling deer numbers and allowing trees to return by themselves. Its target for reforestation is so feeble that the UK would still have less than half the average current European forest cover by 2050.

One of the reasons for this timidity is its preposterous assumption that if land is unsuitable for commercial forestry, it's unsuitable for trees. There are plenty of places where trees grow well, store carbon and provide magnificent habitats, but won't produce straight 50-foot poles. It envisages not wild woods, but plantations, whose purpose is the discredited policy of "bioenergy with carbon capture and storage". This means growing wood to burn in power stations, then capturing and burying the carbon emissions. It will almost certainly cause more harm than good. Could the committee's enthusiasm have anything to do with the fact that one of its members works for Drax, the energy company pioneering this disastrous technology? Throughout the report, business appears to come first; nature and climate last.

All this, the CCC says, is consistent with the target it has set for the government, of net zero greenhouse gas emissions by 2050. It tells me that the rationale for this target "remains valid today", meeting the UK's obligations under the Paris Agreement. This agreement commits governments to seek "to limit the temperature increase to 1.5°C above pre-industrial levels". But in November, the UN published a report showing that preventing more than 1.5°C means cutting greenhouse gas emissions by 7.6% every year between now and 2030: a much steeper trajectory than the CCC's. The committee has set the wrong target, for the wrong date.

But I think the problem runs deeper than this. It's not just the target that's wrong, but the very notion of setting targets in an emergency.

When firefighters arrive at a burning building, they don't set themselves a target of rescuing three of the five inhabitants. They seek – aware that they might not succeed – to rescue everyone they can. Their aim is to maximise the number of lives they save. In the climate emergency, our aim should be to maximise both the reduction of emissions and the drawing down of carbon dioxide already in the atmosphere. There is no safe level of global heating: every increment kills.

Maximisation is implicit in the Paris Agreement: it requires governments to pursue "the highest possible ambition". In its land-use report, the CCC repeatedly admits that it could go further, but insists it doesn't need to, because its policies will meet the target. The target has supplanted the ultimate objective, which is to respond appropriately to the climate emergency. This is a classic vindication

of Goodhart's Law: "when a measure becomes a target, it ceases to be a good measure".

We are all familiar with the absurdities of target culture. We know how, in many workplaces, the target becomes the task. We know how official targets for depriving people of social security ruined thousands of lives. We know that the Windrush scandal – the persecution and wrongful deportation of people legally entitled to reside in the UK – was caused in part by the Home Office target for "enforced returns". We know how targets encourage people to game the system, as hospital administrators do with their waiting lists, and cause Kafkaesque nightmares of overzealous officialdom, as David Boyle documents in his new book Tickbox.

But less discussed is the way in which targets can encourage officials to underperform. As soon as you set a target, you pull back from maximisation. Even if you say "this target is the minimum", as the CCC does, politicians treat it as the line they need to cross. At this point, they fulfil their legal duty, even if they fail to fulfil their wider duty of care.

Is a policy of maximisation possible? It is not only possible, it's already happening, in exactly the wrong place. The 2015 Infrastructure Act introduced a legal duty to "maximise the economic recovery" of petroleum in the UK. If drilling companies fail to maximise their extraction of fossil fuel from an oilfield, they will be forced to surrender their licence to operate. In other words, while the government observes a legal minimum (the CCC's target) for reducing greenhouse gases, it observes a legal maximum for increasing them.

The appropriate response to the climate emergency is a legal duty to maximise climate action. The CCC's board should be disbanded and replaced by people whose mandate is rigorously to explore every economic sector, in search of the maximum possible cuts in greenhouse gases, and the maximum possible drawdown. We have arrived at the burning building. The only humane and reasonable aim is to rescue everyone inside. ■

1. *George Monbiot's website*
2. *First published in the Guardian 29th January 2020*

Ecology & Biodiversity

Is Corona good for the planet?

Nick Bowen

I was asked to write on how ecologically based landscape design can help us meet UK biodiversity and CO_2 sequestration targets in the run-up to COP26. But the Corona lockdown has provided some interesting real-life laboratory conditions for how we might approach them.

On a visit to Hamburg in June 2005, the first thing that struck me on the taxi ride into the city was how all the urban road verges were simply left to get on with it; neither mown to an even sward, nor scraped & planted with a pictorial meadow of showy flowers, but grasses and forbs just left to grow and flower in a rather scruffy manner. No matter how constrained our local authority budgets for landscape maintenance have become, there always seems to be enough to pay for mowing of grass. Until March 23rd.

Now, and for the past 8 weeks, our public prairies have lain uncut and have responded with a display of flowering grasses and 'weeds' that have subtly transformed our urban scene; bumble bees, hoverflies and a whole range of flies roam these new meadows. Perhaps for this spring at least we have paused the decline in invertebrate diversity? Could this be one way in which we learn to love a bit more untidiness; to need a bit of scoundrel in our lives? For it is transformations

Nick Bowen

such as this that are needed; not penny parcel meadow strips but wholesale change to the way in which we manage green spaces.

And whilst all this busy maintenance has been not going on, we have been experiencing roads emptied back to an early 1950s level of motor vehicles; roads on which people on bikes have been appearing ■

Facts & Imaginings

Ecological design at the heart

Professor Sandy Halliday CEng Hon FRIAS

"What's invisible and silent and kills your grandparents?"

Covid19.

"What's invisible and silent and kills your kids?"

Greenhouse gases.

Panic about the former is understandably widespread. I remain baffled by the apparent composure about the latter. But then when we take our transport advice from an adult who puts a car into space and pillory a child who likes facts, nothing should surprise.

The greatest change that I have observed since Greta arrived is a raised awareness that we do not simply shape the environment, our environment also shapes us. If we try to kill the thing that helps us eat, it fights back! So we have created a monster. Flooding kills. Fires kill. Pollution kills. Urban heat islands kill. Male fertility is falling. Who would have guessed that the natural world is so pugnacious?! Well a woman who was also pilloried for liking facts warned us: - "Our war against nature is inevitably a war against ourselves," Silent Spring, Carson 1962

Imagine if in the 60's we had ceased hostilities with our planet and looked to harmonious agriculture and technologies.

At 13, in 1970, my textbook illustrated 20C global temperature rise by 2020 if trends continued. As an aspiring chemist and physicist the greenhouse effect made complete sense to me. I did not go on climate strike because I thought we were going to fix it. Indeed, I thought that was the point of reading textbooks, of gaining knowledge. Thankfully warming has not been that fast. We now know how devastating that 2°C rise will be if it is not prevented.

Meanwhile, a Scottish environmentalist, landscaper and planner – was giving the opening address at the 1st Earth Day. "Why Must I be the person who brings the bad news? My propositions are simple. You have no assurance of a future... Man is an epidemic. He treats the world as a storehouse for his delectation, he plunders rapes, poisons and kills this living system, in ignorance of its workings and its fundamental value." McHarg, 1970

Soon afterwards we were provided with four unbending laws of ecology – by one of the world's most extraordinary environmental thinkers, including: -

"Everything must go somewhere" The Closing Circle, Commoner 1971

But still we didn't listen. Instead we evolved a take/waste/pollute culture with dreadful consequences: greenhouse gases, synthetic fertilizers, toxic wastes, and non-biodegradable materials…. and using a fraction of our creativity. Imagine if we had insisted that industry not pollute in the first place, rather than committing future generations to cleaning up after it.

I studied Engineering Design and Appropriate Technology – renewable energy, shelter, and food – and soon found out that inequality really kills and "Designing like you gave a damn" was radical. Our graduating cohort was unemployable. Meanwhile I arrived at an epiphany. The choice was simple - A) sustainable development, B) unsustainable development or C) no development at all. A designer's dream! There are limits to growth... but no limits to development.

Imagine if we could focus

Sandy Halliday

creatively on life quality, gross national happiness and preventing unsustainable trends. A stroll to the top rather than a rat race to the bottom.

As an engineer and SEDA member I have sought solutions compatible with these undeniable truths from Carson, Commoner, McHarg whilst seeing 50 years of 'A' class thinkers elbowed into the undergrowth to make way for 'D' class leaders. I became an engineer to solve problems but the bad guys have been winning all along and I'm simply a countercultural aggravation – a skunk at their picnic. But I am also A Fact and it shouldn't be too late.

So to COP 26. COP25 was a failure. Many would argue that any jamboree of air and rail miles activists is a dubious recipe for success. But cancellation was wrong. Time is one of our scarcest resources. COP26 need no longer be a time and space limited Glasgow gathering overseen by Westminster government climate change denial. It is a huge opportunity for wide scale participative CAN DO action to tackle the global climate and ecological emergency and demonstrate creative change is possible in Scotland.

"Participation is the redistribution of power that enables the have-not citizens, to be included in the future"

- Sherry Arnstein

Imagine if all environmental organisations in Scotland were to "think globally but act locally". To

COP26

Think Globally, Act Locally: 1st thoughts on a devolved COP26

What kinds of organisations?
School strike for climate
Greener Scotland
Transition towns
Greenpeace
Surfers Against Sewage
RSPB
SEDA
FOE
AECB
SCRAN
SCCAN
Stop Climate Chaos Scotland
WWF
Greenpeace Scotland
Community Farm Garden
Reforesting Scotland
XR groups
Guides/scouts
NTS/HES
Global Ecovillage Network
Take One Action

What kinds of actions?
Low-impact ideas banking
Visioning:
Future transport
Future food
Future work
Future health
Planting days
Play days
Local exchange days
Living memory days
Energy efficiency days
Repair days
Healthy housing lessons
Plant-a-tree day
Woodland walk days

What kinds of pledges?
Plastic-free villages/towns
Car-free weeks
Biek days
No-fly

Which sectors?
Health
Fashion
Farming/food
Play/recreation/sport
Banking
Transport
Building
Tourism
Forestry
Education

What networks?
School/play development officers
Fire service
LA sustainable development groups
Professional SDGs
Students
Educators
Designers
Chamber of Commerce
Farmers

Sandy Halliday & United Nations

facilitate ceasing of hostilities and focus on life quality. We could engage with positive and negative experience from Covid19 in a spirit of genuine problem solving. There seems no better time to get personal and start a conversation in each city, town, village, community, park, library, telephone box, gallery and pop up, creating links within communities, creating links across communities, to encourage 1,000,000's of activities and pledges of positive change, to ensure more progress in the next 5 years than in the previous 50. SEDA's role? To put ecological design where it belongs, at the heart and soul of social and economic recovery. Now that's a fact to imagine. ■

Sandy is the author of Sustainable Construction (2018) 2nd Ed. Routledge . A series of talks on environmental pioneers – the Howard Liddell Memorial Lectures is available on the SEDA website https://www.seda.uk.net/resources

Build Back Better Talk 2: SEDA & Transition Edinburgh
Katherine Trebeck: Wellbeing Economics: Amsterdam City Doughnut

Katherine Trebeck outlines how we can achieve a **#JustRecovery** from Covid-19 and how Amsterdam City Doughnut research points a way. Amsterdam City Doughnut - commissioned by the Deputy Mayor - illustrates how embroiled northern cities are in inequality, exploitation, racism and extractivism.

Katherine Trebeck, Policy and Advocacy Lead for the Wellbeing Economy Alliance, will set this work in context of a new economic framework and kick off roundtable discussions exploring a way out of the black hole of Coronavirus Pandemic & Financial Depression.

6pm for 6.15pm start - 7.45pm on Thursday 25th June.
Link to be sent to registrants. Please book at https://transition25june.eventbrite.co.uk

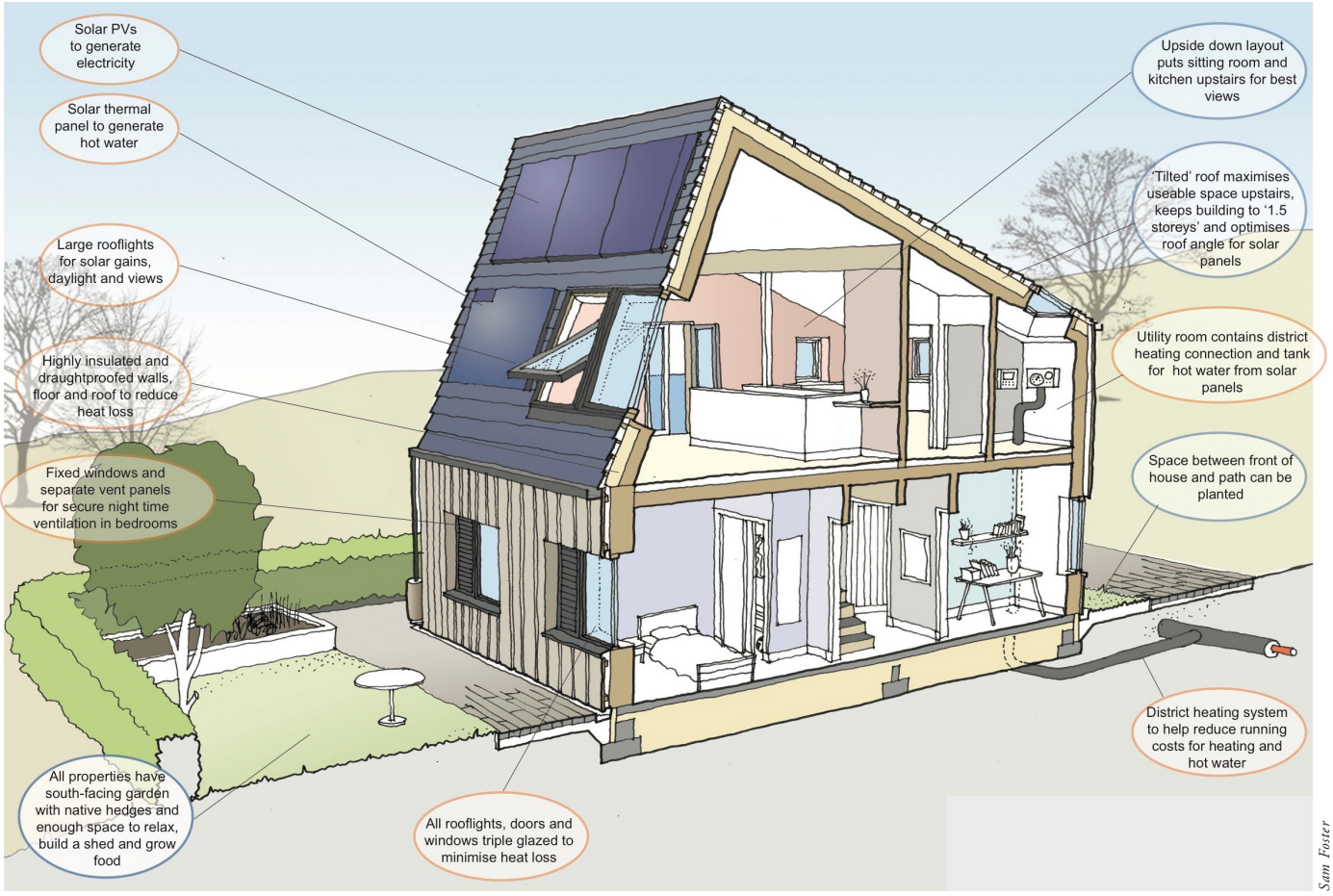
WELLBEING ECONOMY ALLIANCE

Scottish Communities Climate Action Network

SEDA Solutions for COP26

Housing

Sam Foster



Sam Foster

The agenda for COP26 is getting bigger by the day. Somewhere on the list for global heads of state might be an item marked 'buildings & infrastructure'; just one heading jostling for attention on a huge agenda. And yet 'buildings and infrastructure' account for nearly 50% of global greenhouse gas emissions, create half of all waste and play a significant role in the health and well-being of almost everyone on the planet.

Getting to the Scottish Government's target of 'net zero carbon' relies on a combination of reducing demand for the energy that creates greenhouse gas emissions and decarbonising supply of the energy that is generated. While electricity from investment-led renewables increases year on year[1] we have been less successful at creating a housing stock that is fit for purpose. One-third of people are in fuel poverty or extreme fuel poverty[2], causing a public health disaster[3] and contributing to the climate emergency.

At the moment the debate about renovating existing houses tends to focus on simply making it less bad; yanking it up by the scruff to some sort of level that we call 'tolerable' or 'decent', to achieve a predicted energy efficiency of 'C' for example.

Not only is this a depressingly low level of ambition, it is based on a prediction of energy efficiency rather than any measured data and won't make any meaningful contribution to the Scottish Government's 'net zero carbon' target. Is that really the best we can hope for? Of course not.

> What if, through COP26, the United Kingdom and Scottish Governments aimed higher?

1 Revise priorities:

- Move from a private model to a public model of house construction, home ownership and rental. UK private home ownership is driven by a toxic combination of aggressive marketing, under-supply and inflation-led 'value' increases. Moving to a model of public ownership removes most individual-led incentives, encouraging mutual maintenance and improvement of buildings and creating a positive impact on the environment, health, and sense of place.
- Prioritise refurbishment of buildings over demolition and replacement. Make refurbishing buildings an equal priority to new-build. Retaining existing buildings & renovating them to create homes with high standards of health, energy efficiency and design will almost always require less material and result in fewer greenhouse gas emissions than demolishing to build something new of a similar size.
- Reconsider financial drivers. The argument for demolition is usually based on cost. When well-applied, Lifecycle Analysis and Costing usually shows that demolition and new-build aren't cheaper at all, when we factor in embodied carbon, maintenance, redecoration, health, adaptation etc. VAT levels on refurbishment & new-builds should be equal. Housing is a National Infrastructure priority, making a strong case for Quantitative Easing to help pay for a national programme of high quality refurbishment. Revenue from community-owned renewable energy projects is often used to pay for such work. Imagine generating clean energy which actually helps pay to reduce energy bills!

2 Set ambitious targets:

- We need politicians to set in place targets that our existing housing must achieve. Groups across the UK, such as London Energy Transformation Initiative[4] and Carbon Co-op[5] have done much of the government's legwork for them, understanding the challenges in refurbishing housing to achieve 'net zero carbon'. Scottish think tank Common Weal have gone one step further and set out a structure and costed plan to do this[6]. All of this must be done so that we achieve very high levels of energy efficiency and occupant health, through the use of non-toxic materials & components with low embodied energy. Chris Morgan's excellent book 'Sustainable Renovation' (SEDA/Pebble Trust, 2018[7]) shows how to do this.
- While many standards address single aspects of performance – such as Passivhaus[8], which considers energy use – others exist with wider considerations, such as Living Building Challenge[9]. Integral to the success of 'net zero carbon' homes is the quality of external landscaping, which can reduce energy use in homes by providing shade & shelter as well as creating beautiful spaces in which to relax, rather than having to travel – by vehicle – to public parks. The design standard 'Building With Nature'[10] is a great starting point.

3 Maintain, monitor & feedback:

- Around 80% of homes in Scotland are privately owned or rented from private property owners[11] and we tend to assume they'll carry on working without attention until, inevitably, something goes wrong. The environmental impact of the resulting waste and replacement materials is easily reduced through regular maintenance.
- What if a simple, annual home check was mandatory? The Tenement Handbook[12], regular maintenance schemes such as Stitch in Time[13], and Stirling Council's Traditional Buildings Health Check[14] are all examples of how this can be put into practice.
- One step up from maintenance is pro-actively checking the performance of existing houses as we refurbish them. A lack of this in the Conservative Government's ill-informed, market-led Green Deal created a lot of problems[15]. Building Performance Evaluation and Post-Occupancy Evaluation are key & Professor Fjonn Stevenson's book 'Housing Fit For Purpose' (RIBA, 2019[16]) demonstrates how.

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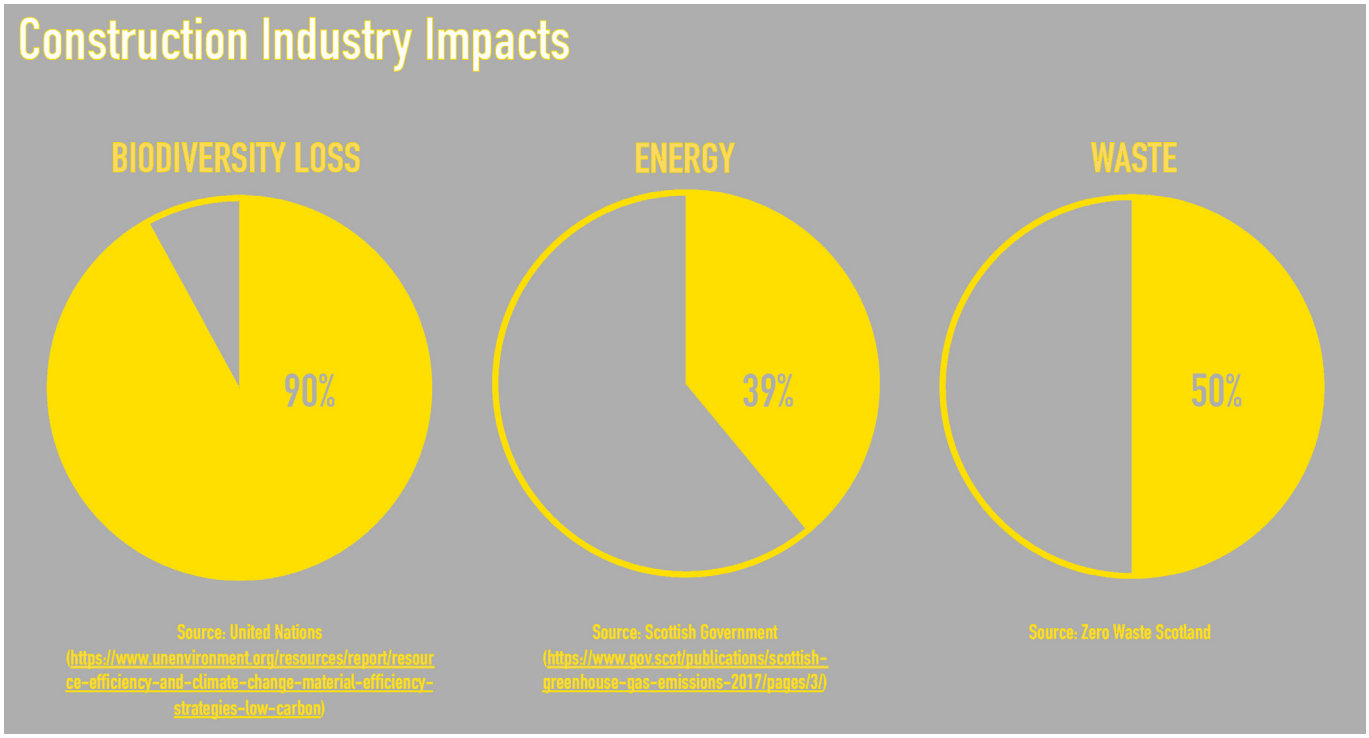


Sam Foster

4 Think forward:

- Thinking about inevitable changes in housing over the next 100 years, one of the obvious things is that the only new materials we'll have for construction and refurbishment will be those that are grown and those that are reclaimed or recycled. Grown materials include timber, hemp & straw, which also sequester carbon dioxide from the atmosphere, so the use of these must be maximised. But how do we recycle or reclaim materials & components when we put them together in such complicated ways? And how do we prevent toxic compounds from endlessly cycling in this system? SEDA's guide for Design & Deconstruction[17] offers advice.
- Without commitment from those with the power to enable and finance all of this we'll still be talking about it in 2030 – the IPCC date by which we need to achieve zero carbon if we're to have any hope of limiting warming to 1.5°C.
- It is abundantly clear that the knowledge and skills exist to refurbish existing housing stock to the level needed to avoid the worst effects of climate change. Those of us working on refurbishment projects have the ability to make these really count. But with the right level of political will, we can actually do it across the whole country. ■

Sam Foster

1. https://www.gov.scot/publications/annual-energy-statement-2019/pages/3/
2. Energy Action Scotland, https://www.eas.org.uk/en/fuel-poverty-overview_50439/
3. https://pure.strath.ac.uk/ws/portalfiles/portal/71287505/Howieson_Sustainability2017_The_great_Scottish_housing_disaster_the_impacts_of_feudalism_modernism.pdf
4. https://www.leti.london/publications
5. https://carbon.coop/portfolio/people-powered-retrofit/
6. https://commonweal.scot/our-common-home
7. https://www.seda.uk.net/design-guides
8. https://www.passivhaustrust.org.uk/
9. https://living-future.org/lbc/
10. https://www.buildingwithnature.org.uk/about
11. https://www.gov.scot/publications/housing-statistics-scotland-2019-key-trends-summary/
12. http://thetenement.co.uk/
13. https://www.ihbc.org.uk/stitch/Stitch%20in%20Time.pdf
14. http://traditionalbuildingshealthcheck.org/
15. https://www.theguardian.com/money/2014/jan/18/green-deal-green-disaster
16. https://www.architecture.com/riba-books/books/sustainability/product/housing-fit-for-purpose-performance-feedback-and-learning.html
17. https://www.seda.uk.net/design-guides

Common Weal | Common Home

How to fix it

Robin McAlpine

There is no phrase which better reflects why the world's environment is in such a mess, why poverty scars everything and why our economy is still geared up to make both things worse; 'something must be done'. Something always needs to be done, however, – the response is always 'but what'? The intention to change, to be better, is nothing more than a recognition of failure.

There is a widespread belief that stating your intention is the first step towards that change. Indeed COP26 is based on that premise. I have always felt differently; intentions matter but they change nothing. Only work changes things, and work isn't an abstract concept like 'values' or 'aspirations' or 'intentions'. Work is a binary concept – it is done or it is not done.

Common Weal

Early last year Common Weal, the think tank of which I'm Director, reached a point where we grew weary of hearing that 'something must be done' about climate change. On that we agree – but since we've known that for decades, how are we still at the 'something' stage? In fact worse, how can we still be at a stage where any credit is being given for announcing climate emergencies or setting distant targets?

The science has warned of this emergency for ages. Unless there is a way that we can actually do these things, start the work, then why bother setting targets. So is there a way we can actually do something? Common Weal had been reading with great interest the many things written about a Green New Deal. What we could see was a plan.

If you boil it down, tackling climate change is effectively a big engineering job. Our behaviours and our lifestyles matter, but the fact that politicians and business leaders talk about this a lot makes me suspicious that they don't want people to concentrate on the real causes of this crisis. In the end all the damage being done to the environment is place-specific. It is not general, it happens somewhere. The carbon dioxide is emitted from somewhere, the biocides are sprayed somewhere, the plastic is sold somewhere, the heat leaks from a house which is somewhere, the airplane flies from somewhere. This is not an amorphous lifestyle issue.

Common Home

We took the approach that you can identify all the harm Scotland does to the environment (not just climate change, but biocides, plastic pollution, over-exploitation of dwindling resources and everything else). We look at where the harm was being done (and not just in Scotland – we included the ways life in Scotland harms other parts of the world). And then we set about reducing this harm to zero – by identifying how we engineer this harmful activity out of our lives. Soon it began to feel like we might have set ourselves an unachievable task. But we worked on it relentlessly for the best part of a year.

We counted the holes to be dug, the pipes to be laid, the roofs to be insulated. We mapped the

Robin McAlpine

waste and how to stop it, explored the farming methodologies that don't need biocides. And we took head-on the sheer harm done by over-consumption.

Then we priced how much it would take to fix it all – and how we can pay for it. No, we didn't get quite to zero on everything, but really only air travel is currently an unsolvable problem. It will cost us £175 billion to do the rest – but we also modelled the economic impact of this work and, if we do this right, it will more than pay for itself.

Covid 19 Common Home

We launched Common Home at the very end of last year. Now we have put an intensive six weeks into adapting this (and bringing in a lot of other social and economic policy) to build a very large programme of action for using the post-virus period to transform Scotland into the nation we all want to see. At the time of writing we are close to launching this work. We think this provides a clear, achievable and inspiring route forward from here.

So yes, something must be done. We think it is Common Home. We hope for your support. ■

Architecture & Built Environment

COP26: More than just a vision

Richard Atkins

Following this edition's theme: "What, as a SEDA Member and Architect, do I want COP26 to do for Architecture and the Built Environment?" It is a good question to ask.

The headline from the Paris Agreement in 2015 was a commitment to 'pursuing efforts to limit temperature increase to 1.5°C above pre-industrial levels'[1], but this was just one of three equal commitments, the other two being: 'Increasing the ability to adapt to the adverse impacts of climate change…' and 'Making finance flows consistent with a pathway to low greenhouse gas emissions and climate resilient development.'

For more detail of what these really mean, I searched the outputs from COP25[2]. Quickly my hooded eyes glazed over. Reams and reams of reports, I am sure all worthy and informative but, in my admittedly curtailed exploration, nothing appeared to be a detailed analysis of, or a potential strategy for, the built environment.

Moving on then. Arguably Architecture and the Built Environment have a role to play in achieving all 17 of the UN's Sustainability Goals[3], but it is most explicit in Goal 11: Sustainable Cities and Communities[4]. These aspirations have never been more relevant as we grope our way toward a new normal.

Before we think of the 'what' however, let's think of the 'how'. The current pandemic is routinely described as a `war`. Every loss to Covid-19 is a personal tragedy for victims, their families and friends; every bit as devastating as in wartime. However, a war it is not and the cumulative effect, although huge, will, hopefully, be nothing like that of WW2.

Peter Dejong/AP

Yet, after that conflict, which left large parts of the world virtually wasteland, societies were changed irrevocably. We are witnessing, again, how quickly Governments around the world can react when they need to. Buildings converted to hospitals in days and Government funding to retain jobs in the billions. Has anyone else noticed that the UK Government quietly printed £645billion of new money in March this year[5]? Clearly, there are money trees when needed.

The future seems to be a world where we will travel less, we will travel electric, we will travel alone or in small groups. We will social distance outside the home (surely it should be physical distance?). We will homework / school / leisure more. We will use more virtual media.

All of this places new demands on infrastructure, schools, public buildings and offices. It means that our homes take on even more importance as a place of security, affordability, healthiness and well-being.

So back to the question. I want COP26, when it happens, to recognise the level of investment in time, thought and imagination (as well as money) that is needed to reconfigure our world to meet the new, existing, and previously ignored, demands upon it. I want COP26 to set out more than just a high-level vision and the production of endless reports on metrics and data, possible policy interventions, and reporting mechanisms.

I want COP26 to make it the responsibility of every Government to understand, articulate and adjust socio-economic norms to retain, create and enhance the quality of the built environment, wherever that may be and in whatever form it takes. ■

1. https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement
2. https://unfccc.int/documents
3. https://www.un.org/sustainabledevelopment/sustainable-development-goals/
4. https://www.un.org/sustainabledevelopment/cities/
5. https://www.bankofengland.co.uk/monetary-policy/quantitative-easing

COP26

Regenerative Agriculture

Agro-ecological farming

Sue Manning

Agriculture will be a huge subject of COP26 debate. SEDA's Autumn magazine ran an article Cow or Corn?: Could Agroecological farming Lead the Fight? which raised some questions about the efficacy of animal based farming. In response, SEDA member and farmer, Sue Manning's answer is, of course, 'Yes' to Cow!

Sue Manning

March 2020

At **Tombreck** we are using agro-ecological farming to produce food, predominately meat and meat products. No fertiliser or weed killers have been used for decades, 50,000 trees were recently planted and sheep numbers have been drastically reduced. Now we are managing grazing with sheep and cattle to improve biodiversity, allowing the grass to grow long and lock in carbon. A recent Carbon Audit for the 240-acre farm offers net emissions of –510,142 kg CO_{2e}, which will improve over time.

The Autumn 2019 article does not mention 'Community'. The role of people and communities in keeping our uplands vibrant, as well as producing food is vital. Imagine if agro-ecological farming could be replicated throughout Scotland, with more people, more food, more biodiversity and a greater ability to lock in carbon. Tombreck is not alone in this; regenerative farming is being practiced on many farms around the world, with the claimed potential of even reversing climate change.

www.youtube.com/watch?v=HaZ3mkG6fco

May 2020

In the two months since the above was written, farmers are now 'Key Workers' and doing their best to respond to the demand for local food. At the beginning of lockdown, as supermarket shelves were emptying, many consumers turned to farm shops and farmers markets. Also many small producers earned much of their income selling to the tourist market, but this sector has entirely shut down. Here is the opportunity to make a much-needed shift towards a new customer base, of growing food for local people.

However, there are challenges. While the sudden increase in demand was great it was also overwhelming. Will we have enough to supply the demand? How do we sell our produce? We are also in the 'hungry gap', where it is too early to harvest this year's produce, and the winter stores are finished. Suppliers of seed and livestock were unable to keep up with demand, with shortages and unpredictability of supplies, even of hens! There are shortages of labour and difficulty in obtaining tools, materials and arranging repairs. But it is springtime, and therefore the best time of year to plan increased food production.

At Tombreck we are working to strengthen local food production and connections. The market gardeners are hosts for 'Neighbourfood' **https://www.neighbourfood.co.uk** which provides a local market for produce. Several residents have been 'furloughed' and amazing things are happening. Along with large-scale infrastructure projects, new gardens have been created and existing ones expanded, and teenagers are doing field scale potato planting! We are even selling nettle tops and foraged salad.

The biggest challenge of all is how to keep this momentum going. It takes a crisis to remind us of the importance of our local food sector and of its fragility, but what will happen when everyone goes back to 'normal'; will we be left with unsold produce and overgrown fields?

One of the tasks of The Scottish Agriculture Bill is to work out a system to replace EU CAP payments. This is an opportunity to move farm subsidies away from damaging practices towards smaller more sustainable producers by acknowledging their contributions to environmental services and rural development. The Agriculture Bill could properly support the local food economy and help transition our food system towards one based on agro-ecological methods, and now is the chance to write these 'new' approaches into law. ■

Whole Life Carbon Analysis

COP26 embodied and operational CO_{2e}

Chris Morgan & Claire Coquet

About 30 years ago the conventional wisdom was that embodied energy represented about 5% of the lifetime energy footprint of a building. So if you wanted to avoid concrete and play with straw bales, that was cute, but if you were serious about saving the planet then operational energy efficiency was the thing on which to concentrate.

Nowadays, we know that embodied energy and CO_2 can often represent half of the lifetime footprint of a building, sometimes more. This is partly due to improved understanding of embodied carbon, and also because buildings now tend to use much less operational energy. In short, if you want to save the planet, there is no doubt that you need to consider both.

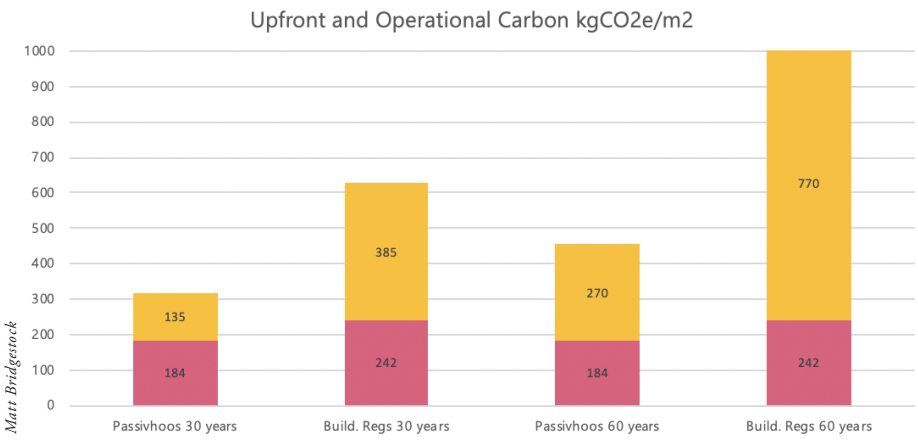
It is something the regulations have been slow to catch up with, but there does seem to be widespread groundswell of interest in the subject, so hopefully this will change.

The RICS Methodology

There has been talk of using the term 'upfront carbon' to emphasise the importance of the energy it took to get to site. I can see the point of this but I would prefer to keep the term 'embodied' because it retains the sense of the energy and carbon locked into each component beyond site and into the future. As a society we seem to be losing the ability to think long-term but it is vital we don't, and the value of embodied carbon is that it offers a sort of portal into the past, present and future of everything we specify.

In this regard the RICS Methodology to calculate embodied carbon is valuable as it sets out a total of 4 stages in which a building and its components 'embody' energy. These are - A: before site, B: usage (occupation) C: the end of life and D: reuse & recovery. Taking Stages C and D seriously is something not done much by designers but is, in essence, the stage in which we engaged with the 'Design for Deconstruction' Guide about fifteen years ago and which remains on the SEDA website.

These four stages are divided into a further 17 sub-stages. A4 for example is transportation of materials to site, B6 is the total operational energy of the building over its service life, while C1 is carbon associated with de-construction and demolition. Along with the RICS methodology, another valuable document is the LETI (London Energy Transformation Initiative) Embodied Carbon Primer which has some wonderful infographics, one of which is shown here to illustrate the various stages.



Matt Bridgestock

Considering the whole life of a building and its components in this way seems the most complete way to frame the overall footprint of the buildings we design and thus term 'Whole Life Carbon' sets both operational and embodied carbon into a meaningful long term context.

Simple and Early

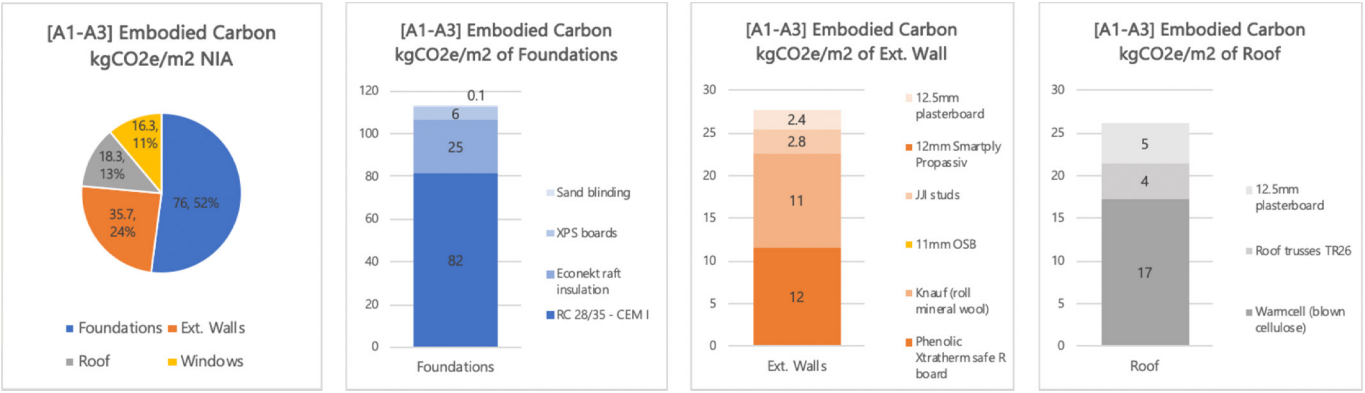
Most analysis of embodied carbon to date has been academic, documenting the design and build process from outside. It has also usually been painstaking and too detailed to be routinely used as part of the design process. In addition it has usually only been possible at the later stages of the process because it is only then that sufficiently detailed information was available.

Much has been learnt from this academic and detailed work, but if embodied carbon analysis of any sort is to improve and change design practice, then it has to become integral to that process, it needs to be reasonably simple, and it needs to be deployable at an early stage in the process.

To an extent, common sense and a little knowledge will enable this; if you know that concrete, plastics and metals use large amounts of embodied carbon, then simply design buildings as far as possible without them. Many in SEDA already do this. However, as embodied carbon analysis becomes part of our design and regulatory process, as it surely must, we will need to develop tools and data which allow us to make the invisible visible: to compare strategies and materials, agree a common set of methodologies and ultimately, benchmarks for compliance.

The RIBA 2030 targets provide a sensible set of metrics which we could

COP26



Matt Bridgestock

all adopt for embodied carbon. Others exist and may ultimately hold sway but the main thing is that those of us in SEDA engage with this process as soon as we can - this effort will need extensive collaboration and we all need to become embodied carbon 'literate' and effectively move this conversation forward together.

At John Gilbert Architects we have developed a tool to do just this and have been applying it to our 'Passivhoos' projects. This made sense because we could fold back the learning into subsequent projects, but of course the learning spills out into other projects and the intention is that we all become familiar with the numbers involved and the best solutions across the design process. Such embodied CO_2 measurement tools could be incorporated into Building Standards (like SAP) as a UK or Scottish Govt COP26 commitment.

The importance of 2030

There is a reason why all of this is much more important than previously thought.

We are all familiar with the balance that needs to be struck with every design decision whereby we accept that something - let's say photovoltaics - does indeed take x amount of carbon to make, but that's OK because it saves y amount of carbon in the long term. The smaller x, and the bigger y, the better.

However, if we consider that according to the IPCC and others we only have 10 years before it is too late to avert runaway climate change (50% CO_{2e} reduction) then we don't have the luxury of much x any more. We can't afford to invest in things that use a large chunk of carbon now, to save it later, because by then it will be too late.

We honestly believe we now have to strive even harder to avoid high-embodied energy products of all sorts and look to natural, local and recycled / re-used materials for almost everything. It's no longer cute - it's critical. ■

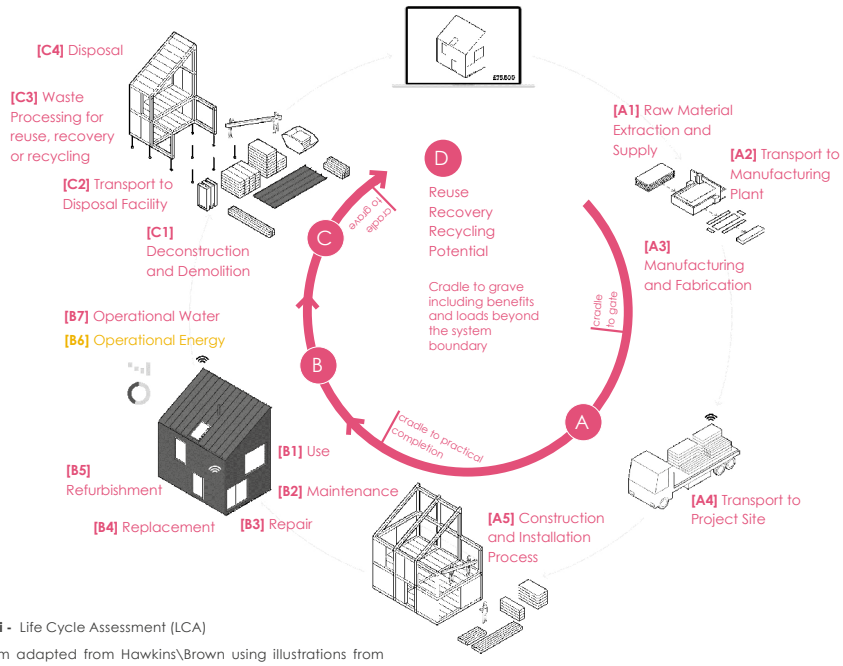


Figure ii - Life Cycle Assessment (LCA) Diagram adapted from Hawkins\Brown using illustrations from Open Systems Lab 2018 licensed under Creative Commons CC-BY-ND

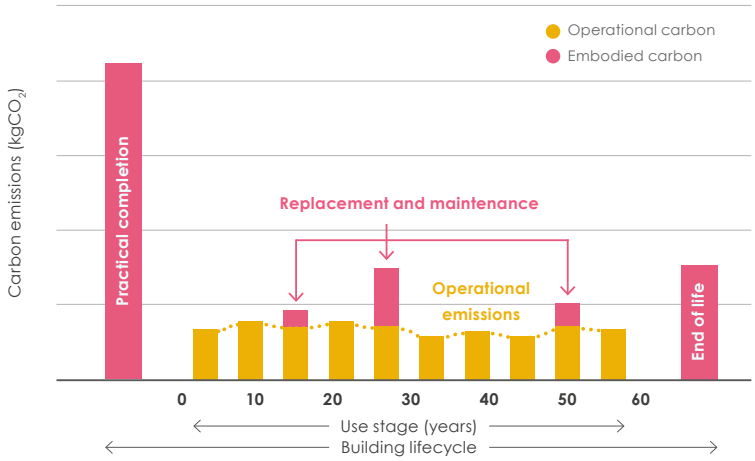


Figure iii - Emission breakdown of a building's life cycle

LETI

Solar & Our Future Resilience

COP26 and solar energy

Gloria Lo & Colin Porteous

COP26 which was due to be held in November in Glasgow is cancelled. But while the world is facing unprecedented challenge of Covid 19 and countries are rightly focusing efforts in saving lives and fighting the pandemic, we cannot forget the Climate Emergency is still the biggest threat facing humanity over the long term. This is the "boiled frog" scenario.

SEDA Solar is an incarnation of the former Scottish Solar Energy Group (SSEG), which had to wind up last year due to lack of core capacity to meet its constitutional commitments – ironic due to the prevailing Climate Crisis.

SEDA Solar will continue SSEG's original aim: "To promote research, development, knowledge and application of solar energy in Scotland".

Broadly, our past activities concerned 'knowledge transfer', often hands-on, an example being a 2019 study trip to Nottingham- see this magazine. We had hoped SEDA Solar could visit east Switzerland and west Austria this year, but we will have to wait until COVID-19 is tamed.

Fuel poverty & COP26

Solar supply as one moves northward diminishes more slowly than the demand for space-heating rose. SSEG's architectural cohort always sought to use both 'passive' and 'active' techniques to address problems. Initial high fuel costs, made much worse by high unemployment during the Thatcher 1980s, caused rife 'fuel poverty', and solar energy could then, and still can, be part of the solution, in turn reducing Greenhouse Gas emissions.

SSEG

SCOTTISH SOLAR ENERGY GROUP

Although 'fuel poverty' has changed its shape somewhat, its presence remains stubbornly high, statistically and socially, and solar energy in all its various applications should still play a useful part. This Climate Crisis as brought home to our politicians by Greta Thunberg, is an opportunity to think where SEDA Solar might now go, especially apropos COP26.

As we re-emerge from the pandemic economic and social crisis, it offers the best chance for nations and the globe to recover better and to include the most vulnerable in the recovery plans. A chance for all of us to reflect and shape the future in ways that are green, clean, healthy, just, safe, and more resilient.

Energy is a big part of it, and as we move forward we need to think of a plan how the different sectors can support each other – how Scotland sits within the global picture, and how solar sits within the wider sustainability framework, whether it be from nurturing plants all the way to generating electricity. After all, sunshine and rainfall are the fundamentals that all life cannot do without. During this viral-isolation and lockdown, we are all relying heavily on technology, all of which would not function without power. And the air quality around the world has improved due to decrease in manufacturing, the sun is shining through more than ever, the solar energy that Scotland is enjoying is increasing – a temporary compensating unintended consequence of COVID-19.

Build resilience

Perhaps we may even find this an even better opportunity to reflect on climate ambitions, how to build resilience and lower emissions. We want you all to join in, to be an inclusive community to support changes and build a better future together. Please do write in with your views to solar@seda.uk.net.

We would love to share your views in future issues and where appropriate, with the backdrop of other solar organisations and expertise, joining up your thoughts with how local and global initiatives, organisations and more could work together. ■

COP26

School of Natural Building

& What it wants COP26 to do for the built environment

Barbara Jones

The most obvious ways to mitigate against the negative effects of climate change within the built environment is to move directly to using plant-based & natural building materials, and make all new buildings extremely energy efficient. It's not a popular choice, since the main players within construction would have to make unwelcome changes that would affect their profit margins, but it is a sensible and achievable one.

The School of Natural Building (SNaB) has been promoting this solution for many years. By using timber and straw for building, with other natural insulation products like hemp, wood-fibre, wool & recycled cotton, and natural plasters of lime and clay, we would immediately reduce the amount of CO_2 produced by the construction industry and instead store CO_2 within the fabric of the building. Energy efficiency can easily be achieved by good quality design, building and insulation.

So SNaB would like COP26 to insist on:

- Using materials for construction and retrofit that store CO_2 instead of producing it
- Using materials for construction & retrofit that are low in embodied energy
- A 'materials first' approach
- Mandating governments to increase legal requirements for energy efficiency in all new buildings - achieving a primary energy demand of no more than 85 kWh/m^2
- Retrofitting all existing buildings to bring them up to a high standard of energy efficiency, ideally also 85 kWh/m^2
- Positively encouraging self-build by freeing up land, and the building of modest homes
- Improving the quality of construction, with qualified training for contractors
- Setting up a legal body in each country to oversee and enforce quality on the building site
- Post occupancy checks to ensure that energy efficiency standards are being achieved and severe fines including retrofit if not
- A major global campaign to raise public awareness of the issues about healthy buildings, materials and energy efficiency
- Adding knowledge and skills about natural building, energy efficiency, health and storage of CO_2 into all school curricula

It is not unrealistic to think that we could achieve the move to plant-based building systems. The UK produces about 5 million tonnes of surplus straw every year which could be put to this use without changing agricultural policy, and we have a growing sustainable timber industry. We have excellent straw panel production companies like EcoCocon & Modcell already achieving these energy efficient standards with natural materials. SNaB was involved with a Passivhaus standard house, for example, using Ecococon straw panels in Herefordshire for £1350/m^2.

Prefabricated modular systems can give us very energy efficient buildings at good prices and speed. It would mean teaching natural building skills to a high standard within the established education system, and the creation of new jobs in the natural building sector. Focusing on retrofit as well would also

Barbara Jones

increase employment.

Natural materials are part of breathable wall systems, which mean that indoor air quality (IAQ) is also improved and in combination with good ventilation, moulds and condensation are eliminated, thus improving health and well-being for occupants dramatically. Straw Works designed load-bearing straw council house which achieved airtightness of 2.62ach with no membrane or tapes.

Finally, the Covid-19 pandemic has seen some great community activity and pulling together. We should build on that and encourage communities to be more self-sustaining and to self-build to the above standards. Cuerden Valley Park Visitor Centre and Café, designed by Straw Works, for example, was community build, comprising 98% natural materials. SNaB specialises in training, support and mentoring for self-builders who want to build with quality, and natural materials, to reduce their need for energy in the long term. Building together with a group of like-minded people is fun, inspiring, even transformational.

It's not a big ask – is it? ■

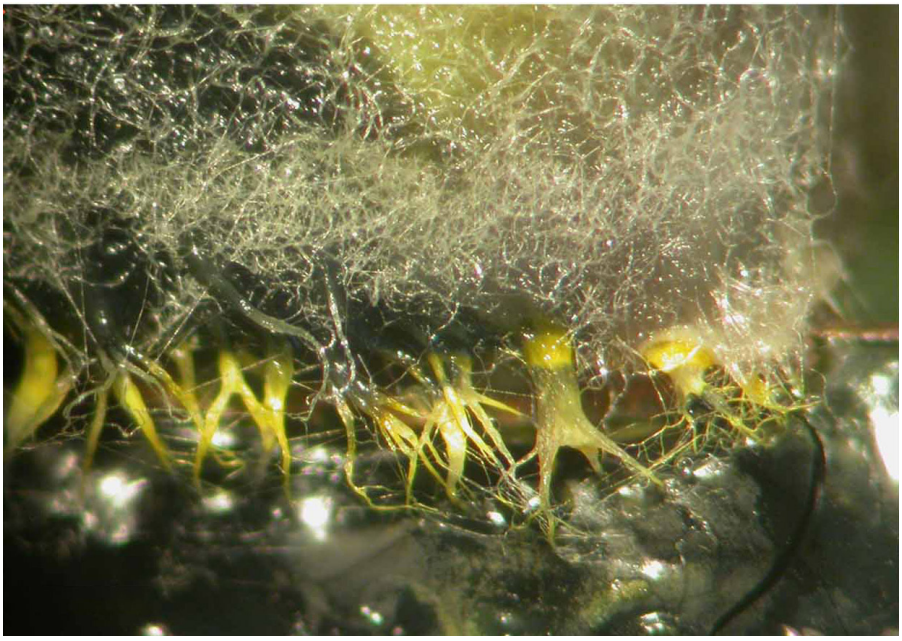
Barbara Jones

Fungi, Metals & Minerals

Pollutant treatment, metal recovery & biodeterioration

Professor Geoffrey Michael Gadd

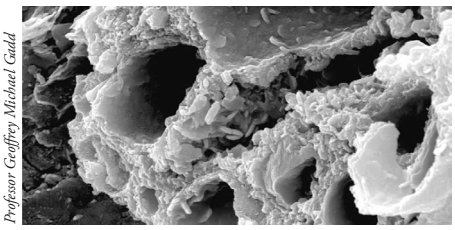
The most obvious environmental roles of fungi are as decomposers, plant pathogens and symbionts (mycorrhizas, lichens), and in rock and mineral bioweathering, and the maintenance of soil structure due to their filamentous branching growth. They are also familiar as biodeteriorative agents of food and food products, wood, paper and leather, and of the built environment and cultural heritage because of their ability to attack rock and mineral-based substrates, including concrete. Their environmental success is driven by their lifestyle and metabolism.



Professor Geoffrey Michael Gadd

Figure 1. Colonization and transformation of depleted uranium (DU) by the fungus Hymenoscyphus ericae, a root symbiont of heather. The fungus is forming strands and attacking the DU: the yellow colour indicates the formation and transfer of soluble uranium to the colony. Bar marker = 500 µm.

The filamentous branching growth pattern exhibited by the majority of fungi enables exploration and colonization of the substrate and growth towards new favourable locations. Their organic metabolism, as in their close human relatives, depends on assimilation of carbon sources to make energy and building blocks for growth. It is through these physical and biochemical properties that fungi exert their profound influence on biogeochemical processes in the biosphere, especially when considering soil, rock and mineral surfaces, and the plant root-soil interface. For example, symbiotic mycorrhizal fungi are associated with the roots of ~80% of plant species, are essential for plant health, and are responsible for major mineral transformations and environmental redistributions of inorganic nutrients, e.g. essential metals and phosphate, as well as carbon flow. The ubiquity and significance of lichens, a fungal growth form, as pioneer rock-colonizing organisms in the early stages of mineral soil formation is also well known.

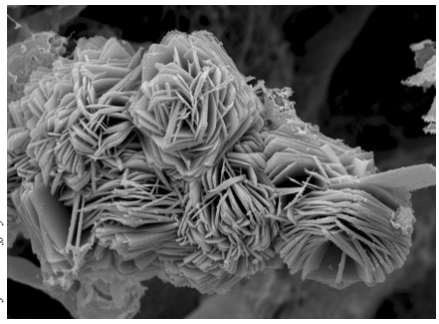


Professor Geoffrey Michael Gadd

Figure 2. Uranium phosphate biomineralization formed on the exterior surfaces of cord-like hyphal aggregates of the fungus Beauveria caledonica. Bar marker = 1 µm.

Fungi are dominant members of the soil microbiota and can operate over a wide range of environmental conditions, even in so-called extreme or polluted environments such as those of high acidity or containing organic and metal pollutants. Fungi are also major biodeterioration agents of stone, wood, plaster, cement and other building materials, and important components of rock-inhabiting microbial communities with significant roles in mineral dissolution and mineral formation. This has consequences for the built environment and for cultural heritage, e.g. historic buildings, monuments, statues, gravestones, and frescoes, where effects range from staining and discolouration to pitting, etching, dissolution and spalling (exfoliation) of exterior layers.

What is perhaps not so widely appreciated is that these natural roles of fungi as ecological engineers are also significant for human and ecosystem health in the treatment of pollution from organic and inorganic sources in environmental biotechnology applications such as bioremediation - the application of biological systems to remediate or detoxify environmental pollutants. In addition, fungal properties are receiving growing attention for the biorecovery of useful or valuable elements to aid metal recycling and reclamation, and the development of



Professor Geoffrey Michael Gadd

Figure 3. Uranium phosphate crystals formed on the hyphae of the fungus Aspergillus niger after growth in the presence of soluble uranium and an organic phosphorus source. Bar marker = 500 µm.

new biometal and biomineral products with unusual properties, particularly when formed as nanoparticles.

The ability of fungi to degrade complex natural organic molecules such as lignin, the "woody" component of wood, through excretion of extracellular lignin-degrading enzymes means that they are also capable of degrading a wide variety of potentially toxic xenobiotic molecules that have analogous complex chemical structures. Such xenobiotics can include pesticides, hydrocarbons and even various plastics. Simple soil and composting systems have been successfully developed to treat soil contaminated with substances like pentachlorophenol (PCP) and polynuclear aromatic hydrocarbons (PAHs), the latter being constituents of creosote. Wood-rotting and other fungi have also received attention for the bleaching of dyes and industrial effluents, and the biotreatment of various agricultural wastes such as forestry, pulp and paper by-products, sugar cane bagasse, coffee pulp, sugar beet pulp, apple and tomato pulp, and cyanide.

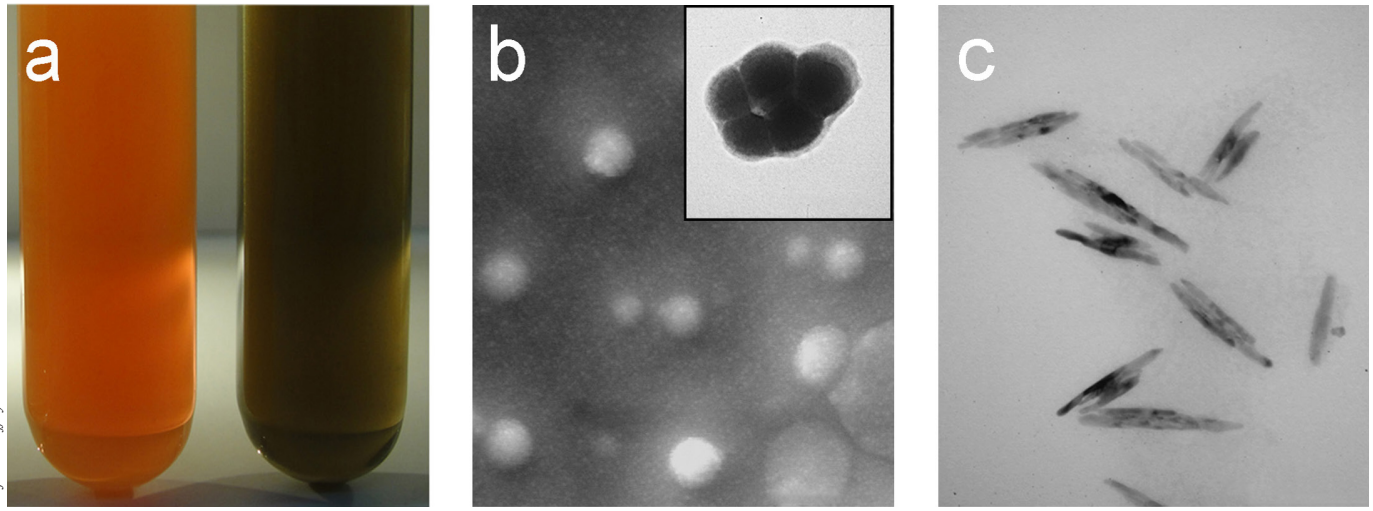
Metals, unlike organics, cannot be degraded but can be converted by microorganisms to altered chemical states differing in mobility, toxicity and other properties. Fungi transform metals, metalloids and organometallic compounds by a variety of biochemical mechanisms. These have been successfully used worldwide in simple soil biotechnologies, including treatment of selenium-polluted land and drainage water. Biomineralization is the ability of organisms to form minerals and this is receiving growing interest because it can be used for biorecovery of valuable elements in biomineral, elemental, and nanoparticulate forms. The application of microbial systems for metal and metalloid bioprocessing and biorecovery is receiving increasing attention with sustainable environmental concepts becoming new trends in many industries.

Research carried out in the Geomicrobiology Group, University of Dundee explores the mechanisms involved in fungal transformations of metals and minerals, and their importance in the natural and built environment and their potential biotechnological applications in metal bioremediation and/or biorecovery. Fungal biomineralization of metal radionuclides such as cobalt and strontium has been the basis of several studies in the context of radionuclide bioremediation and nuclear decommissioning and has led to development of a biological process for decontamination of concrete surface layers.

With current concern over environmental contamination, and the security and supply of world metal and mineral resources, it can be concluded that fungal capabilities may offer a potentially useful contribution to biotechnological and physico-chemical methods for metal bioremediation and biorecovery.

This article is part of a longer report by Professor Gadd, which will soon be available on our website.

Geoffrey Michael Gadd is a professor at the Geomicrobiology Group, School of Life Sciences, University of Dundee, Dundee



Professor Geoffrey Michael Gadd

Fungal production of nanoscale metalloids. (a) suspensions of elemental selenium (red) and elemental tellurium (black) obtained after reduction of sodium selenite or tellurite by biomass-free spent fungal growth medium (b) scanning electron microscopy image of selenium nanoparticles (Bar = 500 nm). The inset is a transmission electron microscopy image of a nanoparticle aggregate (Bar = 200 nm) (c) transmission electron microscopy image of tellurium nanorods (Bar = 400 nm).

Lockdown

Festival of Architecture

Scott McAulay

The Lockdown Festival of Architecture is a spontaneous response to the situation we find ourselves in. From the 4th of May until the lockdown ends, we have and will continue to provide a series of positive, productive, and provocative activities to debate the future after coronavirus. Serious topics, but no stuffy conversations.

Are you Zoomed Out?

We're running an open design call to re-imagine the streets that Covid-19 has emptied! Take a walk, or cycle or run, photograph a space that interests you, and fill it. Design, draw, and collage crafty, self-build structures or crazy visions to spark debate! We will be holding an architectural assembly on the 28th of June, come & have your say!

We are also hosting zoom talks but with a difference; bring pens, paper, and pint(s)! We'll be talking and drawing about designing rebellion, regenerative infrastructure, guerrilla education and more…

While this is a festival of architecture, it is not just for architects. Anyone can get involved, regardless of their education or profession. We are exploring the intersection of architecture and activism in response to the climate crisis, coronavirus and/or other symptoms of the system we live in.

We're bringing together climate and architectural activist groups, including Extinction Rebellion, Architects' Climate Action Network, Anthropocene Architecture School and Architecture Education Declares.

Lockdown Festival of Architecture

Want to get involved? Got events that you want to see? Want to speak out? Write to Peter Brooks at ideas@lockdownfestivalofarchitecture.org

Reset Architecture

Reset Architecture is a collective of 5 second-year architecture students at the Mackintosh School of Architecture, formed out of frustration with the unknowns of future practice. They aim to facilitate conversation for change-engaging debate around social and environmental issues with students and educators, through their workshops, talks and events. Get in touch to keep up to date on the continuing conversation, which started on 1st June! (Only for students at the Mackintosh School of Architecture)

Email at reset.archi@gmail.com and follow them on Instagram @reset.architecture & Facebook @Reset:Society ■

ReSet: Architecture

Sun Times

Scottish Solar Energy Group
Building Solar Values

SEDA Solar: SSEG finding a new home with SEDA

Gloria Lo & David Seel

SEDA members who have been involved with design or research into solar design in architecture, passive, electrical and mechanical, will no doubt have been aware of, or worked with, the Scottish Solar Energy Group SSEG. Since 1979, SSEG have promoted the use of solar in Scotland as a means of reducing national reliance upon fossil-based fuels, whilst enhancing the health and comfort within internal working and living environments. You may have attended their seminars, lectures & conferences, which brought many of the best experts in different fields and backgrounds to Scotland and showed off the best solar projects with visits organised, both locally and abroad.

Founded by prominent figures in the solar field including Kerr MacGregor (mechanical engineer and inventor), Roger Talbot (engineer) and John Wilson (physicist working on early PVs). Solar conferences in early 80s attracted long term supporters which included Gurdev Saluja (engineer by training, teacher in architecture school at Scott Sutherland), Colin Porteous (professor of architecture at MEARU, GSA), Lyle Schnadt & George Goudsmit (Directors of AES Solar) and Jim Norris (Director of Solar Energy Systems). Later, as SSEG grew, notable members that SEDA may know of included John Gilbert (architect), Stas Burek (engineer, senior lecturer at GCU) and Rosalie Menon (senior lecturer at GSA, MEARU).

This gives a flavour of the diversity of SSEG that it embraced a wide range of members and audience in academia/research, in engineering and design, in professional practice and commercial sectors of the solar arena in Scotland. Over the years, SSEG have influenced local thinking, legislation and knowledge transfer in industry.

In spite of all this good work, it has proven harder in recent years to find people to run it as a body in its own right, so at the AGM last year, the SSEG decided to wrap up the organisation. It so happens that Chairman Gloria Lo, Colin Porteous, David Sommervell and John Gilbert are all SEDA members, who knew what the organisation stands for. Further to discussion during the AGM, it was deemed most appropriate and befitting that SEDA should be approached for some form of merger, and perhaps some of the solar activities could continue under SEDA's auspices.

This was agreed in principle as something both organisations would want to do. Not only does it fit very well into sustainable design agenda that SEDA is already involved in, but would also strengthen connections on research, and give members access to the considerable knowledge and expertise that the SSEG have built up over the years. A new dimension in connection to industry and specifically informally through members with Solar Trade Association.

So over the next few months, we intend to set up SEDA Solar, as a group who will carry on this work but within the wider design organisation. SEDA Solar will principally work with SEDA's research remit, but feed into other areas of Policy and Knowledge Sharing / Publications. SEDA will be strengthened by adopting all SSEG members straight away, which is already in action, and so bring in more expertise on what remains a crucial issue in future design and energy issues. As well as generously donating their remaining resources, SSEG's will give SEDA members access to their archive of their long running magazine SunTimes (now onto its 37th edition!) for free downloads, which we will look to add as a section on our website.

The exact working details, and which activities SEDA Solar will run, has yet to be agreed, but we are discussing:

- Continuation of the Kerr MacGregor Award for Solar Innovation annually for new advances in research, innovation in solar equipment and solar designs in architecture and engineering.
- Seminars and study tours (both in Scotland and potentially abroad) to be publicised through SEDA
- Attending the All Energy show for the first time as SEDA Solar, to better co-ordinate with other sustainable energy groups round the rest of the country and attract more members

We hope this is something SEDA Members will welcome and many of you may want to get involved in or be able to use to bring yourself up to date on where solar design is. If you want to know more or be involved in SEDA Solar, please for now get in touch with David though: info@seda.uk.net ■

Giroscope Self-Build

Coltman Street, Hull - Part the Second

Duncan Roberts

Duncan Roberts

The frame-raising for the first of a terrace of three houses took place on 4th March 2020.

The structure was raised in the traditional manner with a crowd of 20 people lifting the bolted post & beam frames upright on their pad foundations.

The frames were then made ready for the work of cutting & fixing ground & first floor joists. Temporary platforms were then built from which the ridge & eaves beams could be fixed so that, two weeks later, the first rafters could be lifted into place.

Then came lockdown & the restrictions put many of Giroscope's activities on hold. Two of the women on the project continued with the building work, lifting 5.4m long rafters into their prepared locations, the length of the timbers helping to ensure suitable physical distancing was maintained.

Since mid-May work on site has restarted in earnest with a small team involved. The timbers have now been assembled and are ready for the second frame-raising. This time a winch will be used with only four people in attendance to guide the frames into position. Watch out for further updates. ■

Portable Self-Build

Building & learning

Freya Bruce

Self build is often cited as one approach to housing. This unique and challenging self-build project built by Freya and her father stems from her academic work concerning 'The Benefit of Self and Community Build and the Political Power of Occupation in Architecture.' The build is a learning tool to display her architectural values reflected in her research. As the project nears completion, it becomes the first step in ambitions to design and build socially and environmentally sustainable homes in the future. ■

Freya Bruce

Common Home

SEDA Knowledge Sharing

David Seel

OUR COMMON HOME

A Green New Deal for Scotland

Common Weal

When restrictions came in across Scotland, stopping SEDA's planned events programme, we looked for ways to stay in touch with members and keep SEDA's knowledge sharing going. David Somervell stepped up to organise our first virtual event on Zoom and the response was huge: over 200 people registered, with about 140 of them taking part, in what was as much a discussion between the participants as a presentation of ideas on Common Weal's 'Our Common Home' Green New Deal plan, by the energised and energising Robin McAlpine (p.09)

With technical assistance from Friends of the Earth Scotland, and a squad of facilitators, the remotely assembled dozens were broken into groups to respond to Robin's call to get widespread support for their radical plan to reset Scotland's economy, industry, trade & consumption to actually start changing things towards an equitable and zero carbon future. I was in a group who wanted to find ways to address issues in how public services are run, and how the narrative can be turned from one of self-sacrifice to one about what we all have to gain.

Through the marvels of an online shared document, the key issues were gathered together as they were discussed, and circulated after the event to all participants. Many were delighted that the "New Deal" was costed and that there is worked out plan of how to avoid 'climate chaos.' See for yourself by visiting https://commonweal.scot/our-common-home.

COP26, by contrast, is the latest round in the multilateralist approach. This would have the greatest effect, if it brings governments together to common action. But you only have to look at the failure of previous COPs and the climate clock running down to see why Robin stated that multilateralism hasn't worked. Scotland & the UK need to commit to a timed and costed plan regardless. Is it not more important to form a 'coalition of the willing' with the other countries that want to do the same?

It will take a massive effort, but we know it can be done. Common Weal's view is that, when delegates zoom to Glasgow from a COVID restricted world in 2021, if we start now, it can only make the whole debate less nebulous and the solutions less intractable. We cannot go back to the world as it was before Covid 19 or COP25. ■

https://commonweal.scot/policy-library

Opinion

What is Wildlife Worth?

Sustainable Thoughts

Dr Paul Walton, RSPB Head of Habitats & Species, Scotland

There has been an upsurge recently in scientific research on how contact with nature improves human well-being. A recent review found studies indicating that contact with nature can lead to reduced stress, better sleep, reduced depression, improved healing and mental health, lower blood pressure, reduced diabetes and even better eyesight.

Paul Walton

It's tempting to see this growing awareness as a breakthrough, a new environmental frontier - and as a professional conservationist I hope and believe there may be truth in that.

But we should not forget that the idea of our well-being and proximity to nature being intimately tied together is not new. The celebrated Scottish conservationist John Muir wrote over a century ago that "Thousands of tired, nerve-shaken, over-civilized people are beginning to find out that… wilderness is a necessity". A century before that, in Glasgow, access to nature was already seen as a human right. When in 1822 a landowner at the fringe of the city attempted to block public access to a rural walkway along the river, there was a riot. The walls blocking access were torn down, the army was called in, and leading protestors were thrown in jail. But the ensuing court case progressed to the House of Lords and ended in a win for the protestors, with charges against them quashed, and the opening of the footpath for all. It remains open today.

In 2019, IPBES - the Intergovernmental Science-policy Panel on Biodiversity and Ecosystem Services - published its first Global Assessment . In the same year, a partnership of over 60 environmental organisations, including for the first time the Scottish Government's scientific adviser SNH, produced and signed-up to the State of Nature in Scotland 2019 report .

The IPBES assessment does for biodiversity what the IPCC does for climate change. It brings together humanity's best expertise and knowledge to make our best possible assessment of where we stand in relation to the natural world. The conclusions are that we are losing biodiversity at a rate higher than ever before in human history; that human welfare is likely to be severely impacted as a result; but that we can halt and reverse the loss of nature and we can come to utilise nature sustainably – but only if we urgently implement transformative change in how we prioritise, resource and action nature conservation.

The State of Nature in Scotland report aims to do a similar job specifically for Scotland. It analyses our best and most objective information on trends in numbers, geographic range and threat-level of wild species in Scotland, across as many groups as possible. It concludes that average species abundance in Scotland has declined by 24% since 1994, species ranges have contracted by 14% since 1970, and that 11% of wildlife species are classified as threatened with national extinction.

There is evidence that an awakening is beginning. In response to the IPBES report, Scotland's First Minister stated that the crisis for biodiversity is as important as the climate crisis. Positive signals are evident in the last Programme for Government and Scotland's Environment Strategy . But still, investment in biodiversity is pathetically small. Threats are still too evident - inappropriate forestry; food production that threatens biodiversity. Wildlife is concentrated in nature reserves and often under-performing protected areas - when we know that species losses can only be reversed if we integrate conservation action widely across landscapes and marine environments. The transformative change called for by IPBES remains undefined and all too distant.

I believe that we have an ethical responsibility towards biodiversity. It is the living potential of our planet, and all future life can only derive from the diversity that exists today. Even leaving moral considerations aside and focusing solely on human self-interest, our recent shared health crisis tells us that our lives will be forever impoverished if we do not meet the IPBES challenge as a matter of urgent national and global priority. ■