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scottish wild land group

Wild Land News

Magazine of the Scottish Wild Land Group

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FREE TO MEMBERS

Wild Land, the Economy, Health and Biodiversity

AGM-Report

The UK's Stumbling Energy Ideology

A Beach is a Place - an Essay by Alastair McIntosh

Spring/Summer 2026

WILD LAND NEWS
Issue 107

Magazine of the
Scottish Wild Land Group

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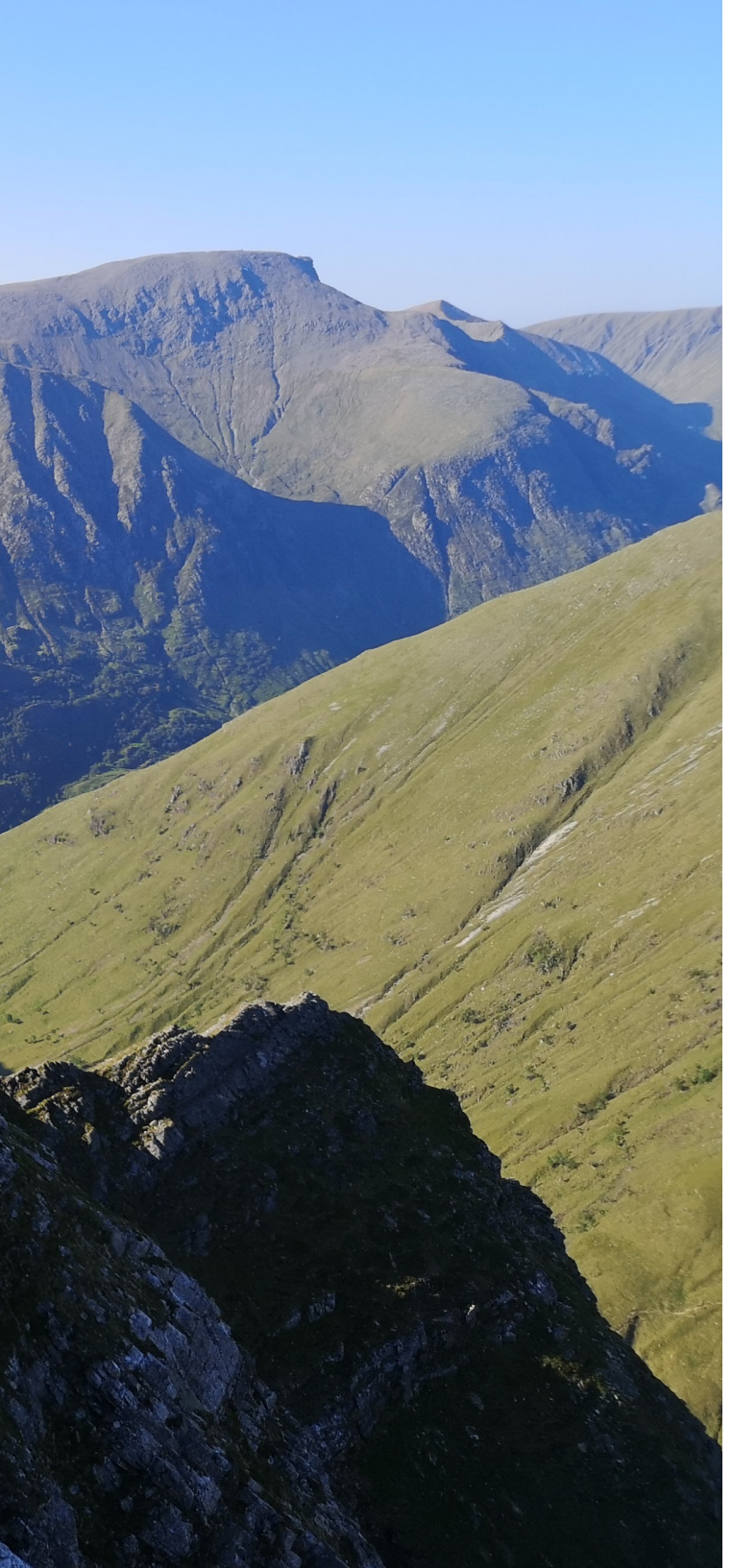

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Front cover: A' Chailleach to Sgùrr nan Clach Geala from Loch na Curra above Achanalt; Photo: Graeme Cornwallis

Left: Ben Nevis from Stob Bàn; Photo: SWLG

Pete Ewing, Convenor

AGM Report

The Scottish Wild Land Group SCIO AGM was held on 6th December 2025 at the Church Hall in Bridge of Allan. Fortunately the weather was kinder than the previous year, and there was a reasonable turnout. Folks may recall we had planned to try and shift the AGM to an earlier date to avoid the winter weather, but unfortunately we didn't quite manage it. Maybe next year…

I presented an account of the year's activities. We have only managed a single issue of *Wild Land News* and we remain without a magazine editor. Thanks go to Doris Dietrich for producing a publishable file from content collated by the steering group, and to James Fenton for the use of his photograph archive.

Work continues at pace on the proposed special edition on the effects of energy policy on wild land and energy security. Concerns about this topic were raised by members at the December 2024 AGM, and it was felt that producing a special edition might lead to better awareness of this issue.

Our membership secretary Grant Cornwallis gave a brief report on membership which is stable. Tim Ambrose presented the accounts – as in previous years, the organisation is pretty solvent. We are more restricted by lack of volunteer time rather than lack of funds.

All of the Trustees – myself as Chairperson, David Roper as Secretary, Tim Ambrose as Treasurer and Grant Cornwallis as Membership Secretary were prepared to stand again. There was one proxy vote opposing Grant's re-election so a vote was held and he was re-elected.

Doris Dietrich kindly agreed to join the Trustees and was co-opted on to the committee.

There was some discussion about holding the AGM as part of an 'Away Day' for members in a scenic area of Scotland, where the AGM could be combined with a walk in the woods or some other outdoor activity. There was quite a lot of enthusiasm for this.

Following the conclusion of the AGM David Roper gave a presentation on the issue of energy policy and wild land. This was fascinating and provoked considerable discussion, particularly as some of the members present had expertise in this area.

Announcing Special Edition — Scottish Wild Land Group

Wind Farms: Wildly, Recklessly Wrong

After nearly a year in the making, SWLG has completed a major research exercise investigating UK energy policy, how the electricity system works, and whether renewable energy can guarantee to deliver the sustainable "net zero" we are promised it can. That promise is used to justify the sacrifice of Scotland's wild lands to turbines and pylons and dams.

SWLG will shortly publish a substantive report emerging from that work*: Wind Farms – Wildly, Recklessly Wrong*,

If you are lobbying against intrusive renewable energy anywhere in the country, this report provides the facts the renewables lobby doesn't want you to know; the knowledge that lets you test policy makers, and challenge their assumptions.

The report starts at the bottom and works up, setting the scene with the science of energy, before explaining how the National Grid works, the impact of renewable energy on its operational stability, and the complex market structures that determine the price of power. It looks to the future with detailed estimates of the power a fully electrified Britain will need in 2050.

In a society entirely dependent on electricity there is no fall back; we look at what the worst case the system must handle could be, and whether that is achievable or sustainable. Concluding it is neither, we attack the challenge of what might work? Our proposal is "nuclear-first", a plan not to eliminate renewable energy entirely, but to lean more heavily into nuclear power. A plan to generate the reliable power we will need without irreversibly industrialising Scotland's wild lands.

Nuclear energy has an understandably poor reputation; we explore the concerns surrounding it, setting its risks in the context of the existential choices we face. Finally, we show how nuclear and renewable generation can work together and suggest how a change in energy policy could fund construction.

Chris Townsend

Wild Land, the Economy, Health and Biodiversity

If you love wild places, love nature, love being in the outdoors and can't imagine living without them it's easy to take their value for granted, thinking it's obvious. Sadly, not all the world agrees. In fact, many of those with power and influence don't and these are the people who make the decisions that affect wild land. That is why the SWLG and other groups are needed.

The general public does support wild land though, as many surveys have found. For example a 2021 survey carried out by Survation on behalf of the National Trust for Scotland found that 88% of Scots regarded wild land as important to them (www.nts.org.uk/what-we-do/advocacy/wild-land). The task, then, is not to persuade ordinary people of the value of wild land but to persuade those in power that they need to take this into account and to persuade those in favour of wild land to speak out.

The case that has to be repeatedly made to those who think in terms of politics, votes and finance rather than nature and beauty is that there is a value in wild land and that this value has many different aspects that they should consider.

We have research on our side. There has been increasing understanding of the value of wild places in recent decades. From personal accounts and the popularity of nature writing to social and scientific studies the evidence for the value of wild land is mounting.

Putting a monetary value on wild land itself is impossible and, I think, meaningless. What price an untouched mountain vista, a wild tangled forest? However, people's enjoyment of wild land can be measured economically, which is important for those who only see value in monetary terms. In 2010 a NatureScot report said, "spending on nature-based tourism is estimated to contribute nearly 40% of all tourism spend supporting 39,000 full time equivalent jobs." (www.nature.scot/professional-advice/social-and-economic-benefits-nature/tourism). That should stir the minds of those who think in terms of spreadsheets and budgets even if they have no comprehension of why anyone would care about wild land. It's worth money.

An increasing number of studies in recent years have shown how important nature is for health, both physical and mental, something lovers of

wild land have always known. A report from the Mental Health Foundation in 2022 says “nature is an important need for many and vital in keeping us emotionally, psychologically and physically healthy”. (www.mentalhealth.org.uk/our-work/research/nature-how-connecting-nature-benefits-our-mental-health).

It’s very encouraging when institutions and organisations start to act on this, especially when it brings together seemingly disparate groups. For example the Highland Green Health Partnership, led by NatureScot, includes representatives from NHS Highland, Highland Council, the Cairngorms National Park, Forestry Scotland and more (www.thinkhealththinknature.scot.nhs.uk/). Initiatives like this are excellent.

With both the tourism and health aspects I think wild land can be seen as the epitome of what nature has to offer. The appeal of the Highlands is not in neatly manicured lawns or carefully cultivated flower beds (lovely though these may be) but in the rugged grandeur of chaotic wildness, nature untamed. We can argue that if trees in a park are of value for health – and they are – then trees in a wild forest are far more so. Wild land should be at the centre of both the economic and health arguments for nature.

Whilst the biodiversity and climate crises are worsening, as shown by the latest State of Nature Scotland Report (www.nature.scot/doc/state-nature-scotland-report), the rise of rewilding projects is encouraging. Restoring nature and biodiversity is essential for the health of the planet and again wild land is a crucial part of this. In land that is truly wild nature should flourish but in too much of Scotland, even in areas that are designated wild, it does not. Perception plays a part here. If land looks wild with little or no obvious sign of human interference it may still have poor biodiversity. Is it then really wild? When I walked through the Southern Uplands on a walk the length of the Scottish Watershed I saw very little wildlife, just plenty of sheep. Most trees were Sitka spruce in regimented plantations. Sheep and spruce dominated land is ecologically impoverished. Both are monocultures, the opposite of natural. The sense of wild land here is superficial.

To my surprise I saw far more wildlife in the Central Lowlands than in the Southern Uplands. A much greater variety of land use with plenty of wild woodland corners and rough moorland ungrazed by sheep (though some of it admittedly used for grouse shooting) made for far healthier nature. Some areas felt just as wild as the Southern Uplands despite being much smaller. How big does somewhere need to be to be called wild land?

The wildest land in Scotland is of course in the Highlands and Islands. This is where it's easy to think that virtually the whole area constitutes wild land (I wish it were so). The magnificent ruggedness of the landscape looks instantly wild. The Scottish Highlands are famous world wide and attract many visitors (there's the economic factor again). How many realise the threats to the land I wonder? How many know how poor the biodiversity is in too many places? I think it's important that this information is shared.

In the spring of 2025, I visited the hills and lochs of the Ardverikie Estate. There are three Munros here and the area feels wild once out of sight of the A86 road. It's a lovely area but a hydro system is to be built here, damming the lochs, flooding the glens. Rather than improved, as it should be, the wildness will be greatly diminished if not destroyed completely even though the scheme lies within Wild Land Area 14 – Rannoch-Nevis-Mamores-Alder. NatureScot says "Wild Land Areas (WLAs) are the most extensive areas of high wildness. They are identified as nationally important in Scottish Planning Policy but are not a statutory designation". (www.nature.scot/professional-advice/landscape/landscape-policy-and-guidance/wild-land/wild-land-area-descriptions-and-assessment-guidance). Obviously not important enough. If protecting wild land is to mean anything it has to include areas like this and wild land areas should be expanded and have statutory protection.

Creag Meagaidh from the south, Photo: James Fenton

Not far from Ardverikie is the Creag Meagaidh National Nature Reserve where reducing grazing pressure has led to increasing natural woodland. This is what should be happening in wild areas. This is what increases biodiversity and also brings visitors. A bit further to the east is the Cairngorms National Park where the largest area of natural Caledonian Pine Forest is now regenerating and expanding under the auspices of Cairngorms Connect, a partnership of land managers (www.cairngormsconnect.org.uk/). This type of project across a vast area should be the way forward for wild land.

Chris Townsend writes on the unquantifiable importance of our wild lands. Chris is a passionate enthusiast for wilderness having spent much of his life exploring, writing about and photographing wild places. He is the author of twenty-five books, most illustrated with his own photographs, has co-authored and contributed to several more and has written and illustrated hundreds of articles for magazines, websites and newspapers. He is a former Trustee of the John Muir Trust and has served as President of the Mountaineering Council of Scotland.

A Membership Secretary Writes...

Please renew your subscription, if you haven't already done so. Subscriptions last for 12 months from inception, but you cannot vote at an AGM unless you have paid-up within that calendar year. You can use PayPal via our website, or send a cheque (to SWLG/Scottish Wild Land Group) to our Treasurer, using the form on the inside back cover of this magazine (a photocopy will do).

If you are a new member, please supply an email address if you can, and also let me know if you need a copy of the current edition or not...as this saves on admin time. Thank you. Membership services queries to:

grantswlg@hotmail.co.uk

Roger Smith, Some personal thoughts by Fred Gordon

Roger was a friend and fellow Founder member of the Scottish Wild Land Group. In those heady early days, we met in each other's houses, including Roger's in a Hillfoots village, by Stirling. I realised that he had great organisational skills and he was elected SWLG's first Chairman, a role he held for many years. An early impression was that he had huge knowledge of the outdoors and was able to point us in the right direction to have the best effect in those important early days. Not the easiest of jobs as many of the early SWLG members were also Journalists. People like Rennie McOwan, Jim Crumley, Nigel Hawkins (who went on to manage the JMT), Adam Watson, they all represented a huge pool of outdoor knowledge and skills. This was possibly the first cohesive effort to look to the protection and preservation of Scotland's wild land.

As editor of the Great Outdoors magazine, Roger was instrumental in setting up 'The Ultimate Challenge' with Ultimate Equipment, a company providing outdoor gear. This went on to become the TGO Challenge and in 1984 I completed this with a friend. There was Roger at the hotel in Montrose ready to congratulate participants, having coordinated the event. The TGO Challenge is, I think, Roger's greatest legacy. Unlike many long-distance challenges, participants are able to choose any route across Scotland, and rely on their own skills and determination.

Latterly, Roger suffered from Parkinson's, which largely curtailed his enthusiasm for participating in his own great outdoors. He will be sadly missed and those who knew him have lost a friend and a great advocate for Scotland's wilder places...

Wild Land News Distributors Wanted!

As a small charity, we have limited resources for publicity and recruitment, and one of our main sources of new members is having the magazine available for sale in outdoor shops (usually for £1 donation to the Rescue Team tin, or any other charity tin present), a process which requires effort.

We currently have nobody covering outlets in Aberdeen and Edinburgh, so please do contact grantswlg@hotmail.co.uk

If you have suitable outlets outwith the aforementioned cities, where you think WLNews would sell, contact me now!

David Watson

The UK's Stumbling Energy Ideology

UK political posturing on "Net Zero" is outpacing engineering reality. We have spent billions over the last nearly 20 years on renewable generation during which time Britain has become, colossally, a nett importer of electricity. Data sources vary but in the year to end 2024, Britain imported circa 33TWh and exported circa 9TWh of electricity. In comparison imports in 2023 were circa 21TWh.

We must balance ideological environmental goals with grid reliability and achieve realism over idealism or we will be in serious trouble.

Personally, as a Chartered Electrical Engineer with 35 years experience in the major energy design/construction field, I am not anti-renewables, I'm pro- reliability.

In Britain we seriously need to balance ambition with realism. For example, calls to increase Scotland's reliance on renewables fail to consider important questions of operational security.

So where are we and what are some of the key challenges extant in providing a sustainable and secure electricity supply in the UK? Many of our politicians arrive at Westminster having taken a non technical education. PPE (Politics, Philosophy and Economics) is popular - and they are therefore technologically illiterate, this while the world is going through the 4th industrial revolution. Yes, philosophy teaches them epistemology where we acquire knowledge and assess its validity. The problem with applying that approach to engineering is politicians don't know what they don't know, but engineers rely on being educated in, and making decisions based upon, scientific facts. Politicians grapple with metaphysics while engineers stick to physics. As idealogues, politicians are prone to developing abstract theories with little basis in reality and, since privatisation of the electricity industry some 30 years ago, whilst positioning themselves front-and-centre, they have allowed their ideology to supplant engineering reality. We need to engineer the future, not just imagine it.

Put succinctly, our politicians are technically and futuristically out of their depth.

I consider the electrical power generation and transmission set-up in the UK to have now become a monumental shambles post-privatisation. Layer upon layer of administration has been created in an attempt to manage the industry whilst the now-private power companies arguably seem to be gaming whatever new investment/incentive scheme our politicians dream up.

Perhaps appropriate is the summary by others that the UK grid System is akin to

an orchestra whose output is provided by independent participants motivated only by profit and conducted by a series of politicians who cannot read music.

Variability of wind-driven generation output renders the UK hugely dependent upon the inter-connectors with Europe. Mid-October, 2025 was very calm, fairly typical and frequently over any year, and we had 5 days of very low wind generation often below 5GW from a UK installed capacity of some 30GW (comprising Onshore 15.7GW/Offshore 14.7GW -within these figures Scotland has Onshore 13.4GW and Offshore 4.3GW) during which period we have typically been relying on up to 60% of our electricity being provided by gas with further additional major imports from Europe. Today, 20th October as I write we are providing circa 42% from gas and nuclear and are importing 20.49% of our electricity needs some 7.69GW, via interconnectors. That is equivalent to the output of 6.5 Torness nuclear power stations and more than the entire UK nuclear capability.

In addition under our politicians' erroneous belief that "biomass" is environmentally neutral and therefore a "renewable" source we are burning huge quantities of north American timber to provide 7.2% of our power today which exercise accrued £869m in 2024 alone in subsidies to the main generating company from us, the bill-payers. This is some £268m higher than in 2023. Since 2002 this specific subsidy has totalled around £6.5bn. Some £652.5m came in 2024 from the Renewables Obligation scheme and £216m from the CfD scheme.

Scotland has to import electricity throughout such frequent becalmed periods, to keep our lights on.

National Energy System Operator operates a continuously open on-line auction from its national control centre one hour ahead of real-time to monitor and buy electricity of the correct type- e.g. sources with high inertia may be urgently required to support stability. Short term supply bid prices are selected for 30 minute periods to keep the UK grid system in balance.

Today, with high levels of unpredictable renewables NESO acknowledges that "balancing services regularly exceed 50% of national demand. For reference the average was just 5% in 2012". This illustrates how dependent the UK is on others, mostly in mainland Europe to keep the country running and the grid in electrical balance.

The NESO balancing mechanism costs in the 24/25 financial year out-turn were £2.7bn: a 10% increase compared to the previous year. In 2012 the costs were £0.9-1bn.(see Monthly Balancing Services Summary). This is not resilience, it is roulette!

Worth watching too have been the periodic claims by NESO as we close coal and gas generation of them "achieving new low carbon records" trumpeting this as the share of UK electricity being generated by fossil fuels falls. We should remain

aware that as the amount of power we import increases, much of it fossil sourced, NESO does not include that carbon in its calculations. The vast majority of energy in Germany, for example, which supplies into the European Grid and therefore onward to the UK was, in 2023, 77.6% from fossil fuels.

Wind turbine generating efficiency follows Betz' Law and is limited to approximately 59% with the best of today's wind turbines achieving around 50%. Prof David Keith and a team from Harvard University studied 411 USA onshore windfarms a few years back and calculated that to theoretically meet the then existing USA electricity demand with 100% wind would warm average surface temperatures by 0.24c and up to 1.0c in some regions - this being caused by turbine mixing of the atmospheric boundary layer. He observed that since the contribution from operating turbines is instantaneous whilst the reduction in CO2 due to reduced fossil fuel generation will take almost 100 years to cool the atmosphere by the same amount, windfarms contribute to global warming over that timeframe and "if your perspective is the next ten years, wind power has "in some respects" a larger climate impact than coal or gas". Ten other smaller non-Harvard USA observational studies have also linked wind power to climate impacts.

At scale, based upon operational data, onshore windfarms in Scotland in round numbers produce 2Watts/m2 and offshore 3Watts/m2. For the USA onshore the Harvard study calculated average output of only around 0.5- 1Watt/m2- this they attributed to the "stilling" impact within huge windfarms.

One horsepower is 746Watts, so to produce the power provided by an average electric lawnmower of say 5Hp requires a UK land area equivalent to 9.5 singles tennis courts. Turning on our typically 8kW shower requires more than half the playing area of Hampden Park. This demonstrates the need for massive land

Whitelee Windfarm—view from Glasgow; Photo: James Fenton

usage and consequential infrastructure.

As we close major coal-fired power stations, nuclear and older gas powered generating stations, and replace them with wind and solar we have progressively less rotational inertia, which is stored energy, within the Grid to support our electrical frequency during system disturbances and Scotland, in particular, will be acutely challenged when Torness closes in a few years followed later by the ageing Peterhead gas turbine station. Loss of system inertia results in frequency changing much more quickly when disturbances occur increasing the risk of supplies tripping, including domestic, in a matter of seconds. Witness the recent near total collapse of the Spanish and Portuguese grids in April last year which resulted from their low inertia and which caused the loss of 15GW of power generation within a few seconds (about half the UK daily demand this week).

Output from wind and solar to the Grid is inverter based, ie. switching DC output to AC, designed predominantly to "follow" the Grid voltage/current conditions, so if the Grid suffers a "wobble" from a disturbance so too do renewables outputs and this lack of inertia creates a systemic risk as demonstrated in the Spain/Portugal collapse. Yes, we are working now on providing battery storage systems and wind and solar inverter outputs that will be "Grid Forming" to reduce the risks of rapid frequency variations during disturbances and to contribute to grid stability rather than rely upon it, but we have a very long way to go. We are required by law to control UK frequency to between 49.5Hz and 50.5Hz.

The Blackhillock Battery Project Phase 1 now operational near Keith is Europe's largest battery system for grid stabilisation and uses grid- forming inverters setting its own output voltage and frequency and thereby providing "synthetic" inertia .Phase 1 rating is 200MW and 400MWhours with Phase 2 scheduled for 2026 to increase this to 300MW continuously for 2 hours, hence 600MWh in support of 3 offshore windfarms Viking (Shetland), Moray East, and Beatrice- with installed capacities of 443MW, 950MW and 588MW respectively. The system emulates the inertia of spinning power station synchronous turbines using fast-acting power electronics. When there is a sudden change in grid frequency it responds in milliseconds to absorb or inject power to help stability and perform like a virtual synchronous machine. Phase 1 operation started in March last year. The UK's estimated "Grid-Forming" need is 18GW minimum, with a 25GW "stretched target" by 2030 (According to NESO's Clean Power 2030 projection), and up to 15GW of that from Blackhillock type battery systems. So we are likely to need 35-50 Blackhillocks around the UK (if similarly rated around 300MW) by 2030. The cost of Blackhillock Phase 1 has not been released by the companies involved but estimates based on industry benchmarks such as £400k to £600k per MW for Battery Energy Storage Systems (BESS) gives a range of estimates from £160m-

£250m. It has also been reported that £101m in debt financing was secured for Phase 1 in Feb 2023 followed by a further £147m in debt financing for Phase2, in Jan 2024. A projected total cost by 2030 of up to around £9bn, if 35 similar units are required and £12.5bn if 50 are required.The balance of necessary grid-forming needs (at further huge expense) are projected to come from pumped hydro, synchronous condensers, and even hydrogen plants with carbon capture, etc. These add hugely to the hidden costs of renewables.

Further hidden costs of course are the Constraint Payments made annually to renewables generators when power output exceeds the capability of the Grid to transport it to meet demand. In 2024, UK consumers paid over £393m to windfarms alone covering the curtailment of some 8.3TWh of wind generated electricity .This is a 91% increase in unusable wind energy compared with 2023 at £310m, when 4.3Twh was curtailed. Scotland's share of the total payments was 98% Where was the coordinated forward planning here?

Also as system strength reduces in our transmission network, as we switch to wind and solar, there is a known risk, analysed in 2017 that prompted Nat Grid to predict that when network faults occur there will be scenarios where HVDC/AC converters will become unstable and voltage will start to surge and oscillate. None the less we have subsequently invested in a network of HVDC interlinks costing £billions hooking up North of Scotland windfarms and nuclear power station hubs, Hunterston completed and Torness likely to follow.

Just as predicted, Scotland suffered two "heart attacks" on 24th August 2021 when oscillations for the 400kV system ranged between approximately 355kV and 435kV with a frequency of around 8Hz lasting between 20 and 25 seconds (which is a long time in the context of power system engineering) the most significant one being close to the northern end of the £1.1bn HVDC link at Spittal, just south of Thurso. We appear to have come close to losing most of the Grid north of the Scottish central belt as several windfarms tripped and the disturbances apparently reached Torness nuclear station near Dunbar, which is believed to have come very close to tripping, and would have blacked out half of the central belt. From discussions within the profession, a suspected potential trigger, although I have not seen this confirmed, may have been the newly commissioned Moray East offshore windfarm interacting with the HVDC Spittal DC/AC converter nearly 50 miles away within the very weak north Scotland Grid.

Now Hunterston has closed it leaves a significant drop in system strength in West Scotland. A consequence is that the Wales/Hunterston HVDC link, which is not of Voltage Source Converter (VSC) design so not capable of supporting "Black Starting" of the local Grid (cannot

energise a dead grid) could in future encounter fault conditions that lead to instability . In that situation, Scotland could not use it to import or export and would have to disconnect.

With the schedule for closure of Torness being currently subject to inspection and assessment it is unlikely that any granted extension will likely be more than a few years beyond 2028. Without urgent action a further weakened Scottish network will likely possess only the ageing gas fired Peterhead power station, as any planned replacement will take time, some small scale pumped storage and hydro plus, in vast predominance, intermittent renewables. To ensure the lights stay on when renewables routinely collapse, often for several days, Scotland will have to rely on imports from England and Wales irrespective of the number of wind turbines we install across the country. Peterhead is not capable of restarting Scotland and neither are any of our windfarms.

As early as 2020 National Grid ESO in its Future Scenarios document identified "Very strong" and "Strong" strategic requirement "needs cases" to provide short circuit reinforcement at eight Scottish sites, including Hunterston.They proposed using existing, ageing, fossil fuel generators driven by power from the grid and running without load and foresee us adding multiple (possibly eight in Scotland) large synchronous compensators with flywheels to mitigate these capability reductions caused by the growth in renewables. All such provision comes at huge capital cost .

Reactive Power

Crucial also to the stability of the Grid is the requirement for sufficient reactive power to be available around the country to support transmission voltage as it does not travel well and is not source produced by renewables . If not, the risk of near instantaneous voltage collapse escalates.

Unless the reader is a trained power systems electrical engineer the concept of reactive power is challenging to understand. The explanation of the theory quickly becomes mathematically impenetrable to the lay person involving, as it does, the mathematics of Complex Numbers which are based on the square root of -1.

Reactive power is the part of complex power that corresponds to storage and retrieval of energy rather than consumption. On an alternating current (AC) power system there are two kinds of power: real/active power that actually carries out work (measured in Megawatts) and reactive power that enables transformers to transform, generators to generate, motors to rotate and transmission lines to transmit (measured in Megavars). Thus, reactive power is needed to keep the grid electric current flowing. It is the power that is not consumed as such but is reflected back into the grid, as opposed to active power (megawatts) which is the power consumed by the load.

Reactive power is therefore the power that circulates between the source and the load, hence reactive power is re-

Beinn na h-Eaglaise & Beinn Sgritheall from Beinn nan Caorach, Arnisdale; Photo: Graeme Cornwallis

ferred to as “Wattless Power “ or alternatively “Wattless Megavars”

Long cables and power lines introduce what are known as reactive capacitive loads created by the parallel conducting lines because an electric field forms between them, through the air for example. One result of this can be an increase in the voltage. Localised adjustment of reactive power is deployed to control this effect.

Closure of large scale synchronous generation from Longannet and Hunterston has greatly reduced our ability to secure reactive power on demand.

Scotland’s annual output from Jan-Dec 2020 of hydro, including pumped storage, was 10.5% of demand but from July 2022 to June 2023 it was down to 6.8%.This reduced proportion would be partly due to an increase in Scotland’s total generation output via the start up of new renewables but this 35% reduction in measured Megawatts power output would also be partly attributable to quick responding pumped storage/hydro stations, such as Foyers, being increasingly run to output only reactive Megavars, not active Megawatts, to keep the weakening north of Scotland Grid afloat due to the increase in wind/solar generation. Our ability to continue to provide increasing demand for Megavars by this route is severely limited.

Rarely aired is a rather dirty secret regarding the variable amounts of methane produced by hydro from organics in the supply water when they are generating ,as it bubbles out of solution. Temperate countries’ hydro schemes are reckoned to produce approximately 0.25g CH4/kWh which is now reckoned

to be significantly greater than for the extraction of coal at 0.18g/kWh. Methane is around 85 times more potent as a greenhouse gas than CO2 over 20 years.

Mr. Humza Yousaf as First Minister in March, 2024, unveiled the National Floating Wind Innovation Centre in Aberdeen asserting that "Scotland is positioning itself as a world-leading nation" and that the Centre "is a major step to realising the country's Net Zero ambitions" it is worth considering the present Contracts for Difference (CfDs) being agreed with our generating companies, and the effect it will have on the bills we will have to meet.

The big generating companies, in what some may regard as their continued gaming of the industry, have recently been flexing their combined commercial muscle to arrest any downward trend in Government Contract for Difference wind generation auction prices.

How? By deploying the simple expedient of refusing to submit any bids under the Governments 2023 Fifth Round administrative strike price procedure, which action resulted in our politicians increasing the CfDs of renewables auction prices for onshore and offshore by up to 66% for the 2024 Sixth Round, in a desperate attempt to appease the industry. For example, the Sixth Round admin. strike price for floating offshore wind (FLOW) rose to £176/MWh from 2023's rejected £116/MWh. Was the First Minister aware before he invested our money?

Hinckley Point C nuclear was contracted amid furore at £92.80/MWh at 2012 prices (if Sizewell C proceeds this drops to £89.50/MWh) and all, including FLOW are escalable annually in relation to UK inflation. For Hinckley C presently this is now estimated to be £125-£130, considerably cheaper than future FLOW wind power and therefore Hinckley's nuclear power always will be cheaper electricity than FLOW wind farms through their contracted life cycles. Can we, the billpayers, afford FLOW prices?

So how is the UK attempting to cope with the future Grid demand and increasing its capability?

We are facing a major increase in electrical demand towards Net Zero as we electrify cars and domestic heating, increase the use of heat pumps and meet the increase in high power demand data centres/growth of AI, where recently designed centres in the UK will consume 500MW. Compare with our nuclear reactors in the UK rated mostly at 600MW each and with new installation designs in the USA requiring 1000MW not to mention the cooling water demand. We certainly cannot build these facilities in Scotland without their having a dedicated 24/7 power station .

Ofgem recently sacked the Nat Grid ESO (Energy System Operator) and created the National Energy System Operator (NESO) however this seems to include many staff who have shuffled over from ESO. Late this year the NESO will produce a Strategic Spatial Energy Plan (SSEP) in conjunction with Scotland and

Wales setting out how we will develop the UK energy system infrastructure for the next 25 years. The National Infrastructure Commission (NIC) forecast that maximum demand will rise by around 50% by 2035 and double by 2050, maximum demand therefore rising from 44GW in 2024 to 59GW in 2035 then to 88Gw by 2050.

NESO will subsequently develop SSEP to define the required Grid upgrades and expansion. Preliminary cost estimates are quoted as £77bn. To some in the profession that large number looks low. Nuclear is seen as providing major baseload but almost all of our existing nuclear plants (all owned by EDF of France-in effect the French Government) will be retired in the next few years further challenging the UK Govt. plans to have some 24GW of nuclear by 2050.

Can we meet this predicted upcoming demand? Some in the profession doubt it. There will certainly be a bunfight for major plant such as cabling, switchgear, circuit-breakers and transformers as present lead times can be up to 4 years and large wind turbines up to 3 years plus new large nuclear plants will likely take 10 years to design/build/commission.

Scotland, unless there is a change of Government at Holyrood, won't have any new nuclear so our dependency on the rest of the UK will further increase.

Should small modular nuclear reactors (SMR's) achieve cheaper electricity than wind and solar then Scotland risks all of its windfarms becoming stranded assets as they will likely also still need huge grid debottlenecking investment and all SMR's will be south of the border closer to highest demand and need little debottlenecking.

That though depends upon the UK being able to procure Haleu (High assay low enriched uranium) for new SMRs from sources other than Russia, the only producer presently of commercial quantities. The idea of building our own Haleu plant in Cheshire may never happen.

In spite of the creation of NESO, I consider that the UK's energy regime lacks independent engineering oversight. Decisions still appear to be shaped by consultancy reports, pressure group lobbying interests, including by the private generating companies, and political expediency. Again I hope, probably forlornly, for the establishment of a statutory technical controlling body, much like the former, disbanded on privatisation, Central Electricity Generating Board (CEGB) comprising experienced engineers with grid operations, generation and system planning experience (and free of politicians) – to establish policy proposals and stress-test infrastructure decisions to establish a properly risk assessed security of supply fit for the UK needs-with the authority to see them through. This will likely require an Act of Parliament .

David B Watson, B.Sc C. Eng MIET FIES.

Sgorr Ruadh, Fuar Tholl, Maol Chean-dearg & An Ruadh -stac from the rock slab, Drochaid Coire Roill, Torridon; Photo: Graeme Cornwallis

Alastair McIntosh

A Beach is a Place...

Twenty-four years have passed since I last wrote for the SWLG. The occasion was significant, a special production to mark the International Year of Mountains. At the time in 2002 we were eleven years into the 13-year-long campaign that it took to stop the proposed and opposed Isle of Harris super quarry. It would have been a carbuncle on the face of nature that, had it gone ahead, would have been the biggest roadstone quarry in the UK if not the world, and located bang in the middle of the South Lewis, Harris and North Uist National Scenic Area (NSA).

The "we" in question were an impassioned but effective crew of local crofters, inside outsiders, outside insiders and NG0s, the latter mostly constellated under the aegis of Scottish Environment LINK. Especially prominent roles were played by WWF both in Scotland and internationally from Geneva, Friends of the Earth Scotland, the Ramblers, RSPB and the governmental agency Scottish Natural Heritage (SNH), now "NatureScot". It was the North-west division of the latter, then under the highly effective leadership of the conservationist Sir John Lister-Kaye, that moved to procure what, in 1994, became the longest ever public inquiry in Scottish history.

"No, No and Three Times No"

As the saga dragged on and the scale of public opposition became apparent, Redland, the English quarrying company that was initially behind it all, saw its share price collapse from 634p in January 1994 before public inquiry to 257p in October 1997. While part of this was down to general market conditions in the quarrying sector, Redland's nosedive was exacerbated by our campaign, and overnight one day it fell prey to a predatory takeover by the French firm Lafarge, then the biggest quarrying company in the world.

Under the auspices of the Harris Council for Social Services, a "Quarry Benefit Group" had been set up to examine the benefits, and disbenefits, that the development might bring. Behind it lay the backing of a highly respected elected local councillor Morag Munro. The elected chair was the Harris boatbuilder John (or Seonaidh) MacAulay, and it had the benefit of advice from Ian Callaghan who then owned the island's Scarista House Hotel. In a previous incarnation, he had been one of the two executives at NatWest Bank who carried out the financial engineering for the Channel Tunnel – a project that had required an astute knowledge of the aggregates industry. Between the NGOs, SNH and such a team of local players, we were no longer saying a polite English "No" to the superquarry. Instead, it was a robust Gaelic and Gallic, "Non, Non et trois fois Non!"

An unexpected breakthrough came when Thierry Groussin, an executive with a French mutual bank, happened to pick up a copy of my book *Soil and Soul: People versus Corporate Power* while he was on holiday. He was horrified that a company like Lafarge would jeopardise its reputation by executing such a project in a National Scenic Area (NSA) in Scotland. Through a

contact in the French finance ministry, he arranged for me to go to Paris to put it to Lafarge that blowing up a NSA was not the sort of thing that they would do in such as a national park back home. I met with three of their vice-presidents. They told me that the only thing they knew about the superquarry was from their legacy Redland executives. However, from escalating legal costs and press cuttings they could see they had "un petit problème en Écosse", and rather astonishingly they asked if I would arrange meetings between them and both the pro- and anti- quarry local parties. They flew in by private jet, and as I tell in the 2nd edition paperbacks of Soil and Soul, "They came; They saw, and in 2004, They decided not to conquer". Indeed, they even had the decency to fly back and announce their decision in person, this time leaving behind €30,000 as a goodwill gesture to the community in recognition of the planning blight that the years of procrastination had caused.

Ironically, this tidy sum paid for the repair of the Leverburgh football field. In a supreme irony, the pitch had long ago been built on timber, because it sits on a saturated peat bog. Stones would have sunk! The same principle is applied to "floating roads" in the tropics, and I have even heard it said, was applied to parts of the original road across the Isle of Mull where it crossed deep peat.

Later, when meeting with up to eighty Lafarge global managers at a time to discuss how to raise the level of the level playing field of corporate social responsibility, I had occasions for a chuckle over a dram. The Leverburgh pitch, I could tell them, demonstrates that quarry products are not the only answer to the built environment!

A Sacred Mountain?

Today, Roineabhal stands intact, the highest mountain in South Harris. It's a magnificent day's walk, perhaps setting off up the track from the old quarry by the loch on the Finsbay road behind Leverburgh, climbing gently up to traverse the skyline ridge, before looping back down to finish at St. Clement's Church (with several minibus connections a day on the Council website). There, on a site said locally to date back to "Druid" times, are some fine medieval stone carvings, the burial place of a famous woman bard, and beneath the flagstone floor rest the bones of the MacCrimmons, the hereditary pipers to the MacLeods of Harris and Dunvegan. The MacCrimmons were the greatest pipers that the world has ever known. Their gift came straight from a lassie from out the sithean, a faerie hill. If that sounds a far out claim, remember that element no. 38 in the periodic table, strontium, is named after Strontian, meaning "the nose of the faerie hill". In the traditional cosmology of these parts, faerie is a metaphor for the imagination. An imagination more primal, more elemental to the poetic fundamentals of reality, than anything merely "imaginary". And there we start to glimpse the deeper meanings of what renders wild land "wild", and perhaps, what stirs some pushback.

In addition to being a boatbuilder, Seonaidh MacAulay of the Quarry Benefit Group is a Gaelic tradition bearer and the author of historical books and pamphlets. While at the height of the public inquiry, he'd quietly climbed the mountain, hacked off the summit rock, and gave it to the Native American war chief and sacred pipe carrier, Chief Stone Eagle, who took it back to Canada into symbolic sanctuary. In

2005, a small party of us climbed the mountain with him to stick it back on - with a bag of Lafarge cement. A literal stone eagle, carved to commemorate a happening by the people of the GalGael Trust in Govan, Glasgow, is displayed in the Hector Heritage Quay Museum in Pictou, Nova Scotia.

After the whole saga was over, I asked Seonaidh if he considered Roineabhal "to be a sacred mountain", or words to that effect. He had attended every day of the gruelling public inquiry and described the process as "an education" for the community. Seonaidh didn't think for long to answer my question. Experience generates meaning: "If it wasn't before, it is now," he said.

The Emergence of Climate Change

The tension displayed in this case study plays out the world over. On the one hand, we have the utility of land as seen by a corporation. Its ethos is extraction, its reference frame is markets, its spirituality (or ultimate concern) is monetary. On the other hand, are indigenous or otherwise rooted local people. Their ethos is custodianship, their reference frame is community, and their spirituality is Providential. As the Westminster Shorter Catechism that was learned by heart by most older islanders quaintly but powerfully puts it: "God executeth His decrees in the works of Creation and Providence."

One way cuts across nature's cycles and delivers high impact extractive results that are driven to the pace and requirements of distantly controlled capital. The other way attunes to nature's cycles and delivers slow but steady-state sustainable results that satisfy local needs as recognised and controlled by custom. I generalise. The best corporations aim to serve. The worst communities will, as one local superquarry objector put it, "sell their heritage for a mess of pottage". But the bottom line was an English-turned-French corporation gotten into bed with a private landowner and parachuting in to dig out ten million tons a year of rock from Roineabhal for sixty years. And to what end? Mostly, not to build homesteads for the poor. Mainly, to pave what Margaret Thatcher back in 1989 had punted as the "great car economy", and in launching her government's report Roads to Prosperity described as "the largest road building programme for the UK since the Romans".

But before completely throwing the book at Thatcher, relevant to road building and later, to wild land, another agenda was rapidly emerging at the time. Climate change was the new kid on the block. In November 1989 and speaking from her background in Chemistry that gave her more clout than any other world leader, Thatcher kicked it into prominence in a major speech to the UN. "The evidence is there. The damage is being done," she said. "What do we, the international community, do about it?"

The contradictions that might have left her and many of us divided were yet to emerge. However, a process hitherto confined mainly to scientific circles was now, and with a growing chorus of wider voices, boosted onto the world political stage. In 1992 the United Nations Conference on Environment and Development, the "Earth Summit" of world leaders held in Rio, established the UN's Framework Convention on Climate Change (UNFCCC). All world governments have now signed up to this. The preamble acknowledges "that change

Harris Hills, Clisham, from Taransay
Photo: James Fenton

in the Earth's climate and its adverse effects are a common concern of humankind", and that additional warming of the Earth's surface from greenhouse gases "may adversely affect natural ecosystems and humankind."

Out of Rio emerged the Conference of the Parties, these being annual meetings of world government representatives to agree on common action to try and tackle a common concern. They began in 1995 with COP 1 in Berlin, moved on through COP 26 in Glasgow 2021 (after a year's postponement due to COVID) towards COP 30 in Brazil November 2025, albeit with deflated energy thanks to Trump's sabotaging of scientific programmes.

When the Earth Summit took place, I was teaching at the Centre for Human Ecology in the Faculty of Science and Engineering at Edinburgh University. Up until then, senior faculty were extremely cautious how, if at all, they talked about global warming. Notice in the UNFCC's preamble the cautious use of "may" in what might adversely affect the planet. The science was not yet "settled". However, since then such hesitancy has been swept away in fire, flood and meticulous scientific studies. The UN's headline statement in its 6th Intergovernmental Panel on Climate Change (IPCC) Assessment Report of 2023 put it more explicitly than ever: "Human activities, principally through emissions of greenhouse gases, have unequivocally caused global warming."

Today, even such plutocratic propaganda outlets as the Daily Mail are quietly softening their years-long relentless campaign of climate change denial that has helped to dampen public concern and political action. Now the narrative of secretively funded lobby groups as the Global Warming Policy Foundation has shifted from denying that there is a problem, to arguing that the proposed remedies are too expensive to implement. For sure, climate change action is costly. Especially to the profligate consumerism of the rich.

A Wicked Problem

That shift, as the science settled and the evidence base relentlessly strengthened,

has given retrospective vindication to the Isle of Harris superquarry campaign and the protests that helped to curb the extent of the 1990s road-building programme. More generally, climate change is what social philosophers call a "wicked problem", one that has no easy answers that add up.

It used to be assumed the Earth's self-healing processes would steadily mop up CO2, the greater part through uptake by the oceans. Accordingly, the scientist James Lovelock once said that if world population fell to somewhere between half a billion and a billion people, we could all live as luxuriously as we wanted. The IPCC's 1990s assessment reports suggested an atmospheric lifetime for CO2 of just 50 – 200 years. It is now realised that natural carbon "sinks" such as the oceans operate slowly and are becoming more and more saturated. This also renders them more acidified, which is damaging to marine life. A growing amount of the CO2 that we pump into the atmosphere will therefore accumulate, and as one scientific paper puts it, remain acting as a global warming gas "on time scales of hundreds of thousands of years, a geologic longevity typically associated in public perceptions with nuclear waste." It takes even longer, millions of years, for sediments to consolidate and lock the carbon fully back into the limestones and fossil-fuel bearing shales and sandstones whence we are releasing it by cement making and fossil fuel burning.

Such near-permanence of growing volumes of airborne carbon is why "Net Zero" matters. It means that we must stop new fossil fuel carbon emissions, except where these can reliably be "offset" by such steps as carbon capture and storage, or growing trees. The former is hideously energy intensive and expensive. The latter, if carried out on a scale that would make a difference, would require a massive appropriation of agricultural land, hope for no net losses from fire, and have somebody hanging around ... forever ... whose job it would be to ensure that the forests don't get chopped down. Reafforestation is very often a good thing in its own right, but to lean on it as a climatological "get out of jail free" card is, as a number of studies are now showing, illusory.

Such, then, is our wicked problem. Our world comprises 8.3 billion people. The UN projects a peak of 10.3 billion by the mid-2080s. Most populations have escalating expectations of material consumption. So far in modern history, that has only been possible due to the energy density, portability and cheapness of fossil fuels.

What, then, can our governments and their electorates do? To walk with and move beyond the current struggling policy prescriptions, I would suggest that we might:

- Welcome falling national fertility levels as a blessing, not least because they fall into place naturally when women have agency, economic freedom and access to good medical care.
- Through taxation and constraints on advertising, discourage consumerism. That is to say, consumption that is in excess of what is needed for a dignified sufficiency of life.
- That implies a shift of economic endeavour, away from sectors that ultimately "can't give no satisfaction", and towards a care society that is orientat-

ed especially towards the young, the vulnerable and the elderly. It is a move away from the cancerous economics of quantitative bloating, to the qualitative fulfilment of such fundamental human needs as food, housing, the arts, connection with one another and with nature, joy and inner deepening.

- And yes, with advanced generation technologies, load management and energy conservation (often of most benefit to the poor), moving towards Net Zero.

A sane and life-giving future therefore requires the constraint of our collective material consumption. The energy required must be within the capacity of what the world can get without fossil fuels. That means renewables, with or without the workload and baseload of atomic power. But notice what is most significant at this juncture. Awareness of the full impact of CO2 has only entered the public equation this century.

Now it is not just uranium that, in parlance of physicists, has "gone critical". Carbon too has gone critical. We live in a very different century and world than was the case exactly fifty years ago when Danish activists came up with the seeming elegance of "Nuclear power? No thanks!" Slogans such as "Radiation lasts 100,000 years" now have an ugly if invisible rival. For on a human evolutionary timescale, "Carbon is forever".

The Threat to Wild Land

This – the tension between renewables and nuclear - is where the impact on wild land most enters the equation. Consider Torness, some thirty miles east of Edinburgh. A single power station can usually meet a quarter of Scotland's peak demand, normally in all weathers, times of day and seasons. The plant has a low landscape visibility impact. It sits on a footprint of just 360 acres (1.5 km2). That's the size of a typical Scottish family farm.

In comparison, Scotland's largest terrestrial wind farm is Whitelee on Eaglesham Moor, some ten miles south of Glasgow. It has a maximum generating capacity a little less than half that of Torness, but because "the wind blows high and the wind blows low" its average output is only a sixth that of the average from Torness. The landscape impact meant that in 2016, a Scottish Government public enquiry refused planning permission to add a further five turbines to the existing 215. According to the inquiry report, the existing site area exceeds 20,000 acres (83 km2).

All else being equal then, for a wind farm like Whitelee to match Torness, six times the land area would be required, about 120,000 acres (500 km2). In round figures then, the wind option has a terrestrial footprint 333 times that of its nuclear equivalent.

Of course, land impact is far from the only consideration. It is, however, the invited subject of this essay. Arguments on the downside of nuclear include accident risk, low level radiation exposure, waste disposal, uranium mining, military threats, weapons proliferation and centralisation. Some of these are hard to argue with. A direct enemy missile hit on either of Torness' two reactors with an east wind blowing could knock quite a dent in, say, central Scotland's property prices! The war between Russia and Ukraine is a stark reminder.

Other objections in the risk equation have

stronger counterarguments. Fourth generation reactors are usually said to be "intrinsically safe" because the physics of passive shutdown forces the reactor towards safe conditions in the event of a compete systems failure. Medical claims made by activists such as Rosalie Bertell in the 1980s about low-level radiation are now considered to have been exaggerated, as have been the problems of waste storage. The International Atomic Energy Association claims that fast reactors have the potential to extract 100 times more energy and to "burn" high level waste as fuel. The main reason why more such plants are not in operation is that they are costly, their 1950s prototypes such as Dounreay were sloppy, and above all, uranium is cheap. The spot price on international markets is about £100 a kilo, compared with gold at a thousand times that price. A major reason why high-level waste is a problem is that there is not sufficient incentive to exploit it.

Papua New Guinea, 1970s
Photo: Alastair McIntosh

Turning now to the downside of renewable energy sources: in addition to extensive land use demands, there is the waste disposal of solar panels and turbine blades, the need for massive pump, hydrogen or battery storage to overcome meteorological, circadian and seasonal intermittency, the mining of rare earth elements for turbine components, lithium for battery storage, and the need to reverse-engineer the transmission infrastructure. The latter, because existing national grids usually fan out from central generating stations close to cities, but renewables usually fan in from rural hinterlands, requiring a high load carrying capacity in places where, previously, wooden posts made do instead of pylons.

That said, there is something very loveable about renewables. When I worked in Papua New Guinea in the late 1970s I did the electrical installation on two small hydroelectric systems. I'll always remember the thrill and the sense of wonder, the hushed rush of water through the turbines, as the lights came on in mountain villages without the costly pounding of a diesel generator. Today, back in Scotland, the solar panels on our roof in Govan connect us to the rhythms of nature and help to feed the heat pump. It's magnificent! But let's be honest. Our house is terraced, facing directly south with an optimal 35° slope on a roof that we own and therefore can control. The system plus wall insulation saves a lot on bills but contributes little to the industrial demands of a world of eight billion people. Ecology is always niche and

invites a patchwork of niche solutions. What works in one situation can be very different in another. But the knowledge and time that such engagement can require is not within everybody's capability. We must be wary, therefore, of special pleading, and of virtue signalling out of niche advantage.

Fundis, Realos and the 'Nuclear Menace'

What emerges, then, is that over-enthusiasm about the promised "white heat of technology" on the one hand, and what might be called the "nuclear knee-jerk" gut reaction on the other, has split opinion amongst the public, politicians, and the loose constellation of concerns that makes up the "green movement". Half a century ago this was a movement relatively united. Some of us might still remember those rhapsodic self-sufficiency magazine sketches from the 1970s, where "windmills" rose to just above the height of trees in homespun ecotopias. However, those are a far cry from the industrial landscape proposed for such as the Ben Aketil Wind Farm upgrade in Skye, where 200-metre-high turbines (now downgraded to 180 metres for the planning inquiry) would impose visual dominance over the Cuillin and MacLeod's Tables landscapes. Such a scale steals the gaze. It imposes a mechanical landscape onto a natural one, what I think of as the jangular - jumbled, jarring and angular.

Within the said green movement, ever since it first won political traction in Germany in the 1980s, a distinction has emerged between the Fundis and the Realos. To generalise, which is not easy as there are many overlaps, internal contradictions, and shifting sands, they might be characterised as follows.

The Fundi (or fundamentalist) position is held by idealist, aesthetic greens: bottom-up, small-is-beautiful, degrowth, participatory yet anarchistic, and uneasy with political compromise and coalitions whilst also seeking to be collaborative. Their orientation is usually rural-centred (or towards urban nature and food growing), with values that become a personal practice, an identity, and even a path of spirituality. More process than task orientated, their worldview is narrated through such qualitative frames as anarcho-syndicalism, intersectionality (especially across race and gender), deep ecology, ecotheology and "the rights of nature."

The Realo (or realist) extreme of the spectrum is held by pragmatic, technology enamoured greens: more top-down to the point of being technocratic, systems orientated, science informed, authoritative (sometimes, authoritarian), managerial and amenable to political compromise and coalitions. Their orientation is usually urban (the rural world being more abstract or recreational), with values based on targets, outcomes, and recognising the need to get a grip on planning, capital flows and macroeconomic policies. More task than process orientated, their worldview is narrated through such quantitative frames as climate models and their imperatives, bilateral agreements, the corporate world (albeit stressing corporate social responsibility), and futures scenarios.

My own work has elements from both of these and note the "antisyzygy" of acknowledging that – the holding of opposites together in tension – and that, with or without a "potential difference" that, as physicists define it, results in voltage. The literary world calls this hallmark of Scottish thought "the Caledonian antisyzygy", and if

Whitelee Windfarm—Construction site; Photo: James Fenton

we might transpose it to Germany's energy policy by way of example, the tensions abound, with or without the voltage.

Here, the Fundi polices of the Green Party, Die Grünen, holding the balance of power with the socialist SPD around the turn of the millennium, led to the phased closing down their nuclear power stations. However, this has had the unintended but not unpredictable consequence of having had to re-activate their coal-fired plants, at least "for the time being". The result, according to Reuters news agency, is that Germany's electricity presently has a carbon intensity of 423 grams of CO2 per kilowatt hour, compared with sunny Spain's 160 grams and nuclear France's mere 45 grams.

In contrast to the German Greens, the more Realo or "ecomodernist" Finnish Green Party, the Vihreät De Gröna, voted overwhelmingly in 2022 to reverse their former opposition to nuclear power. Their current manifesto deems nuclear to be "sustainable energy", and calls for a speeding up of approval processes for small modular reactors (SMRs). Ergo, a pressing example of the green movement's Fundi-Realo antisyzygy.

My conclusion, as expressed in both of my books on climate change, is that Scotland's greens, whether of the Party or more widely, might consider carrying out a fresh technical, economic and ethical appraisal of the arguments for and against nuclear energy. This is pressed on us both by changes in knowledge and technology around both nuclear and renewables, and, especially, by what we now know about the criticality of CO2. Germany presents a singular path. Finland, a binary one, as is Scotland's current status quo but not its future intention. And to carry out an appraisal does not mean to force a decision. But it does mean drawing together and updating evidence, the better to inform values and emergent policy positions.

That suggestion may not go down well with those who might have cut their teeth in the eras of the Windscale (renamed

Sellafield) fire of 1957, the Torness protests led by the Scottish Campaign to Resist the Atomic Menace (SCRAM) in the late 1970s, Chernobyl in 1986, Fukushima in 2011 and more generally, who have lived for half a century under the wholesome sunshine logo of "Nuclear power? No thanks!" I too was anti-nuclear, post-Chernobyl. But given climate change and given both the impacts and intermittency of industrial-scale renewables, I now find my thinking back to the drawing board. This is not hostility towards renewables. Far from it. Locations well offshore for wind, or for solar, rooftops and agrivoltaics that dovetail in with food production can be eminently desirable. I would remark also that there is a massive psychological and economic difference between a terrestrial windfarm owned by a private landowner in bed with a corporation, and one that is substantially owned by, controlled by and beneficial towards a democratically accountable community land trust, such as can be found in the Outer Hebrides.

However, where such democratically consented conditions are not met, an example of the emergent political reality in the Highlands and Islands Scotland, the area that I know best, is that in June this year over 300 people, primarily delegates from 53 community councils representing 72,000 residents, gathered in Beauly. They had come together to discuss concerns about the scale and pace of proposals for windfarms, battery storage sites and transmission lines. In attendance were no less than seven MSPs and MPs from the Conservative, Labour, Lib Dem and SNP parties. The press called it "the largest gathering of community councils in Highland Council history" and reported that delegates "stressed that they were not opposed to net-zero or renewable energy per se, but it came down to the way these projects were being planned and imposed upon communities and landscapes."

As Sir John Lister-Kaye, formerly of Harris superquarry notability, stated: "The meeting sent a clear message to local and national politicians. Passionate and angry voices spoke out against the industrialisation of the Highlands by SSEN's windfarm, substation and pylon proposals. It was powerfully argued that tourism based upon scenic quality and wildland is the life blood of the Highland economy. SSEN's proposals present a real and deeply damaging threat to Highland businesses and resident's welfare."

A second packed meeting, this time of 57 community councils in Inverness in August, saw eleven politicians from the Western Isles and the Highlands - cross-party but with apologies from the Scottish Greens – signing up to a "Unified Statement of the Convention of Community Councils". This recognised "the impact of climate change on our planet" whilst opposing "the industrialisation of the Highlands" in contexts where "community consultation is inadequate and local democracy is being overridden". It called for a Planning Inquiry Commission led by the Scottish Government, and "a pause of all major applications, given the impact upon our communities .... until a clear National Energy Policy is in place and an Economic Impact Assessment undertaken."

The urgent imperative of Net Zero, so commendably put on show by the Scottish Government when it hosted the UK and other states at COP 26 in Glasgow, has a most unsettling impact on us all. "*Après*

moi, le déluge" – once I'm gone, bring on the flood – doesn't cut it for those who care about our children's children's children. The result, and across multiple fronts, is that many of are left divided in our loyalties, divided in our communities, and even, divided in ourselves.

Can Beauty Save the World?

And so, we arrive at the destination of this essay and to the question: if wild land is to be recognised and protected, why so? Why does wild land matter? Why not plant industrial landscapes onto any old "wilderness" that might enrich shareholders and indeed, perhaps necessarily benefit wider society? Given the CO2 imperative, why allow ourselves to be impaled on the horns of either renewables **or** nuclear, or renewables **and** nuclear, if renewables have so few downsides that they should be embraced with little reservation as nature's blessing?

Not least, "wild land" is itself a disputed concept. At one end of the spectrum, some ecologists maintain that there is no such thing in Britain. Every corner of our landscapes have been modified by human impact. At another, I have heard the Norwegian "father" of deep ecology, Arne Naess, say that even flowers in a window box can offer that all-important connection with nature. Even such small things can activate the awakening, self-realisation of our full "ecological self", or the self-actualisation of our profoundly interconnected "farther reaches of human nature" (as Abraham Maslow called it).

A paradox is that land perceived as "wild" is rarely an abstraction from the fulness of what it means to be human. If we refuse to disconnect human nature from natural nature wild and free, we will find that it draws out the finer qualities of what we can be within ourselves and in community, one with another. The native Isle of Lewis artist, Alice Starmore (née Matheson), was once our family's seasonal neighbour on the Arnish Moor. My father, with his Highland ancestral roots and slight island connections, was a young doctor when he met my Birmingham-born mother, a nursing sister, and I was born where they worked in the Doncaster Royal Infirmary. When I was four in 1960, we moved initially to an isolated croft cottage on a ridge on the Lochs Road from Stornoway, called *Druim Dubh*. From the earliest years that my sister and I could wander abroad without close supervision, with the wonder of the moors and their dark peat pools that burst out every summer in a starry firmament of bogbean blossom, this was our playground.

Back then, in the age before Jet2 getaways, Alice's family were amongst the last crofters to practice transhumance. They walked-out their cattle, skirting round the outer streets of Stornoway, several miles into the moorlands of the common grazings. For the halcyon duration of the school holidays, the extended family abided in their sheiling, a small stone hut with a peat fire.

She has taken me to its ruins at *Creagan Iseabal Mhartainn*, Isabella Martin's Crag, that is found a quarter mile diagonally across the road from where we lived. And as she put it in an essay written for the magazine *EarthLines* in 2012, this is an "unwritten landscape". But one which "to us it had a spirit, a heart and a soul, just as we had ourselves." Here was a spot that had been "known, loved and spoken of by generations of the families who spent their

summers in the crag's vicinity". But as we looked out across the hazy dips and rises, we could just make out a bulldozer carving a trail into a distant range of hills that was being prepared to take an array of wind turbines. She could not help but grieve for what she saw unfolding. She had been and seen that there were later plans, with maps that showed her creagan to be razed to make a solid base.

We acknowledged, "Yes, but Bangladesh," the impact that emissions mainly from the wealthy North are having on the South. But as Alice suggests : "*Is it right that in order to 'save' the planet we destroy a precious part of it?*" And that, not least, of a bioregion where many of the older folk alive when we were young had led subsistence ways of life with tiny carbon footprints.

1979: McIntosh Senior getting his hydro going; Photo: Alastair McIntosh

Even at Druim Dubh, I could still point to the hollow just beside a fallen stone circle that was our rubbish dump. There were no rural bin collections then, as there was so little "waste". And in 1956, just the year after I was born, a parliamentary question revealed that 20% of homes in the Western Isles were still not yet connected to the mains electricity supply. For some communities, that is how rapidly advanced modernity has come upon us.

Alice is a world-renowned author on knitting design and technique and also a visual artist. In Mamba, her exhibition catalogue in 2008, she described her feelings in this way: "There are few places in the developed world where people are able to live intimately with nature in its most elemental and awe-inspiring forms; where there is true freedom in a land of no beaten tracks; where it is possible to be alone with wildness and where every footstep is a journey into a world of colour, texture and life."

Note that phrase, "alone with wildness". Note also, "few places in the developed world". For the "developed" world is where the change must happen most. That is where we need most urgently to reconnect in the fullness of community – of soil, of soul and of society. In one of his novels, Dostoevsky has an antagonist mock Prince Myshkin, saintly to the point of being a holy fool, The Idiot of the title, for believing that that beauty could save the world.

"What sort of beauty will save the world?", the antagonist demands, before suggesting that such an absurd notion must be the pipe dream of a Christian, or of a man in love. Just as Christ stayed silent at his trial when Pilate asked him "What is truth?", Prince Myshkin too kept silence. Because some things can't be pinned down in word and definition by subjection to cold reason. And, whereas MAMBA is usually a derogatory reference to wild land - Miles and Miles of Bugger All – Alice Starmore reverses the gaze. What her eye instead beholds, is Miles and Miles of Beauty Astounding.

What is galling, is not the demand for energy necessary for a dignified sufficiency of life, but demand that is consumerist or profligate. The people of the islands know the book of Isaiah and Matthew's gospel, that the Earth is God's "footstool", or resting place. And they know Mark's gospel: "For what shall it profit a man, if he shall gain the whole world, and lose his own soul?" At the Harris superquarry inquiry, the Rev Professor Donald Macleod of the Free Church College shared a platform with me and Chief Stone Eagle in giving testimony. The island's Presbyterian tradition is very conscious of God's glory, and the ways in which it is experienced. Although I am a Quaker, I attend local services when back in Lewis, and just this summer at the Church of Scotland in Uig I heard a sermon that delighted in the manifestations of "glory", also sometimes translated from the original Greek of the New Testament as "beauty". The professor told the inquiry: "Torn between their love of the land and their need for jobs [the people of this island] face a cruel dilemma. Capitalism offers to help them in characteristic fashion: it will relieve unemployment provided the people surrender guardianship of the land, thus violating their own deepest instincts. The people of Harris live conscious of the glory of God. What I'm asking is to reflect on whether this project is to the glory of God. Do we have God's mandate to inflict on Creation a scar of this magnitude that might detract from Creation's ability to reflect the glory of God?"

That was why several weighty indigenous gatekeepers in Harris quietly led the anti-quarry movement. They made the point that to destroy a community's dùthchas, its human and natural heritage in the land, is to trade it for "a mess of pottage" (a reference to Genesis 25, and the selling of birthright). Here we glimpse why some islanders find it disturbing that the Canadian company behind the proposed near-offshore windfarm along the west coast of Lewis has called it, Spiorad na Mara (Spirit of the Sea). To these, it appropriates both language and theology. To underscore the unease, the summer 2024 Project Update that was circulated as a brochure to island homes, contains a heading, "Community Empowerment". It states: "Communities are best placed to identify the needs of their own areas and to develop plans and programmes to meet those needs. It is our intention to provide a fund which, through collaboration with the relevant communities and in accordance with good governance practices, will be managed and administered locally."

Part of me cannot help but remember a certain Mama Miriam with whom I discussed the logging, mining and fishing corporations in the 1980s. Speaking ironically, she said, "And Papua New Guineans should be grateful to those who hand out sweeties to stop us crying while they strip away everything that's precious." Here "empowerment" is reduced to the power to administer a fund, albeit one that is now proposed at a generous £4.5 million a year for the 35-year project life. The attraction is obvious. Moreover, there will be local jobs that will keep some families on the land beyond the construction phase, that for this and wider renewables infrastructure will require a temporary village to be built for 300 migrant workers. What do we want, lights staying on in lived-in homes in the villages, or dark skies? The wind, too, after all, can be that which provides, God's "providence"!

But will the resident community be able to decide these matters, and under the conditions that the UN's declaration on the rights of indigenous people calls FPIC, "Full, Prior and Informed Consent"? In the case of Lewis, very usually, the answer is probably "yes". Most of the land required is held by democratically accountable community land trusts. The directors of these are mindful of their dùthchas, their cultural heritage in the land, and also mindful of what is required to sustain a foothold on the ground in today's world. If I was one of them, and lived along the west coast of Lewis, I would be deeply divided in myself. There are islanders I know well and respect as friends on both sides of the debate. I would not presume to blame either "side" on which the die might fall, provided that local communities through the structures that they control and recognise are truly enabled, as the said brochure put it, to be "best placed to identify the needs of their own areas and to develop plans and programmes to meet those needs." And if nuclear is to continue to be renounced, this is not just about affected communities, but about wider legitimate interests, both in Scotland nationally, and internationally.

That acknowledged, I cannot help but feel as Alice Starmore said. Or as another Alice, the African American poet Alice Walker put it in her poem that laments the hegemony of the *Wasichu*, the white man:

> *Regardless*
> *He has filled*
> *our every face*
> *with his window*
> *Our every window*
> *with his face.*

And as an essay for the Scottish Wild Land Group, I have still not pressed quite deep enough with that fundamental question: What is wild land for? What is a mountain like Roineabhal in a National Scenic Area, or the moorlands or inshore areas of our coasts for, in terms that can justify protection, whether by planning zoning, ecological designation such as SSSIs, or other means of constraining the open season of industrial onslaught?

Does any of it matter? Or is the very notion of "wild land", a vain conceit?

'A Beach is a Place...'

The Spirit, the quickening that is Holy and which roams through and from within our deepest being, is wild and free. In biblical exposition, this quintessence of life itself is likened to the wind, to water and to fire. As Saint John's gospel has it, "The wind blows where it wishes, and you hear its sound, but you do not know where it comes from or where it goes. So it is with everyone who is born of the Spirit."

By drawing from literature, the scholarly field of ecopsychology, and from people's personal experiences, I consider that wild land or "wilderness" can deepen us in such awareness. Unless it is for such technical purposes as environmental designation, we don't need to be purist about the definitions. What matters, the reason why wild land matters. is that it awakens out of what might otherwise be pedestrian lives.

Let me appeal to some testimonies.

Firstly, and perhaps divided within herself, or at least, not yet realising the contradictions: Mrs Thatcher wasn't only pumping "roads to prosperity" in 1989. She also concluded her address on climate change

to the UN General Assembly, with the words: "We must not try to be the lords of all we survey. We are not the lords, we are the Lord's creatures, the trustees of this planet, charged today with preserving life itself—preserving life with all its mystery and all its wonder. May we all be equal to that task.

Secondly, and pursuant to that mystery and wonder: repeatedly in the gospels, we hear that Jesus "often withdrew into the wilderness and prayed" (Luke 5:16). We hear that, "Early in the morning ... Jesus got up, left the house and went off to a solitary place, where he prayed" (Mark 1:35). The Greek that is being translated here, *erernos*, means "lonely" or "solitary" or "wild", thus "wilderness". It also gives us the word "hermit". The text from Mark tells us that the people back in the village where he had been staying sent out Mountain Rescue, and when they found him, exclaimed: "Everyone is looking for you!" Why so? Because "everyone" expects life to unfold along the straight and narrow from where, as Thomas Gray's Elegy has it, "*Their sober wishes never learn'd to stray*" because "*They kept the noiseless tenor of their way.*" However, wilderness quells the ego and quickens the rhythms of the soul.

Thirdly, let me appeal to The Who and their 1973 studio album, Quadrophenia. The track "Bell Boy" tells of a youth stuck in a mindless job, in which:

> *I work in a hotel, all gilt and flash ... always running at someone's pleading heel ...*
> *Some nights I still sleep on the beach Remember when stars were in reach ... keep my lip buttoned down ... you know how I feel*

Those starlit nights provide the lyric's refrain:

> *A beach is a place where a man can feel He's the only soul in the world that's real.*

The wild, for that is what it is when the crowded beach becomes *erernos* or "desert-ed" at night, restores his soul. To deny this would deny his humanity. And we see similar such self-actualisation in Neil Gunn's biographical work, *The Atom of Delight*. He tells how, as a boy, he'd sit upon a boulder in a river, cracking hazel nuts: and "I came upon myself sitting there." As Alan Spence says in his Afterword to the Polygon edition, Gunn's "timeless moment" of self-actualisation, that "atom of delight" or epiphany, is "what in Zen is termed *Satori*; a sudden awakening to reality, an intuition and a certainty, direct seeing, the 'doors of perception cleansed.'"

And fourthly, building on such Zen, the Glasgow Gorbals-born poet, the late Kenneth White, whose life's work unfolded what he called, "poetry, geography – and a higher unity: geopoetics." While he was not a religious poet in any narrow sense, many of White's works touch on the Celtic saints; on those who sought out God and nature, as the 7th century Adomnán of Iona tells us, hermits of the ocean deserts from where to pray more deeply for the world.

Venturing into the white emptiness in his poem, "Labrador" (in *The Bird Path*), opening to "the lonely ways of the sky of sands" and navigating by "the gull path", the poet enters:

A whole new field
in which to labour and to think
and with every step I took
I knew a singular health
mind every day more sharp, more clear //

A man needs to fix his knowledge
But he also needs an emptiness
In which to move

I lived and moved
as I had never done before
became a little more than human even
knew a larger identity

Such identity is not irrelevant to the future of the world.

And lastly: at the Harris Mountain Festival in 2014, I asked to share my platform with Seonaidh MacAulay of the erstwhile Quarry Benefit Group. He had attended every day of the public inquiry into Redland's plan for Roineabhal. In a stunning speech, he summed up the *dùthchas* of the community by recounting that, through the Inquiry process: "A new sense of values emerged, and not just for the visual aspect of our land*scape, but for the diversity of life which is dependent on those hills for their existence, including our own. The hills of Harris are enshrined in our ancient history, and our precious culture and heritage, that are celebrated in poetry, songs and folklore. There is a powerful biblical correlation here that touches all of us when we look to the hills in awe at their ever-changing beauty. The `high places' since the beginning of time have been a source of spiritual strength and a place of refuge. Those hills will live forever in the memories of all those who leave or have left our island."*

Sometimes I receive letters from folks who have walked the pilgrimage of Roineabhal (as it were), perhaps from Leverburgh over and down to St Clements. One was from Robbie Nicol, the professor of outdoors education at Moray House. His email testified: "The mountain is achingly beautiful. The view down into the coire is unlike any other I've experienced. I felt compelled to write."

And so it is, that I have written here of the climate crisis. And of the fossil-fuel-free energy futures choice that boils down mainly to nuclear and/or renewables. And of the dilemmas of the former, and the pressures of the latter on wild land.

I have acknowledged being divided within myself, but not on what matters. Can beauty save the world? I do believe that such is why our wild lands and free-ranging spirits, matter.

***Alastair McIntosh** is the author of books including Soil and Soul: People versus Corporate Power (Aurum 2001), Poacher's Pilgrimage: a Journey into Land and Soul (Birlinn 2016) and Riders on the Storm: The Climate Crisis and the Survival of Being (Birlinn 2020). He is a founding trustee of the GalGael Trust where he lives in Govan, and an honorary professor in the College of Social Sciences at the University of Glasgow. The full text of John MacAulay's keynote address to the 2014 Harris Mountain Festival is at: https://tinyurl.com/42mhke5f*

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