

A GREEN TRANSFORMATION

FOR WALES

A PAPER FROM WALES GREEN PARTY



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FOREWORD

THE CLIMATE EMERGENCY CALLS FOR URGENT ACTION AT SCALE THROUGHOUT WALES. THE NEW THINKING PUT FORWARD HERE IN THIS PROPOSAL FROM WALES GREEN PARTY CAN ACHIEVE MAJOR CHANGE WITHIN EXISTING WELSH GOVERNMENT POWERS. IT IS A CALL TO ACTION. WALES GREEN PARTY WILL WORK WITH OTHERS TO MAKE THIS HAPPEN. HOW COULD A FAILURE TO ACT NOW BE EXPLAINED TO FUTURE GENERATIONS?



ANTHONY SLAUGHTER

LEADER OF WALES GREEN PARTY



“WALES GREEN PARTY HAVE SHOWN GENUINE LEADERSHIP IN PRODUCING THIS SERIOUS EVALUATION OF ALTERNATIVE FINANCE OPTIONS FOR DELIVERING NET ZERO TARGETS. IT IS A HUGELY ENCOURAGING DOCUMENT, RECOGNISING THE TRANSFORMATIVE POTENTIAL OF NEW BREAKTHROUGH INNOVATIONS IN GREEN FINANCE – SUCH AS THE COMMUNITY MUNICIPAL INVESTMENT (CMI) PRODUCT – THAT ARE DESIGNED TO MAKE OUR MONEY MATTER AGAIN BY FUNDING LOCAL PLACE-BASED PROJECTS TO IMPROVE THE WELL-BEING OF OUR COMMUNITIES. IF WE WANT THE WORLD TO BE FAIRER, MORE INCLUSIVE AND SUSTAINABLE, WE ARE GOING TO HAVE TO DO DIFFERENT THINGS WITH OUR MONEY – GREEN PARTY WALES IS SIGNALLING THE WAY AHEAD.”

DR MARK DAVIS, UNIVERSITY OF LEEDS

“I FULLY SUPPORT THIS PROPOSAL FROM WALES GREEN PARTY; A CENTRAL NOT FOR PROFIT CORPORATE BODY FOR DELIVERING GREEN INFRASTRUCTURE WILL BE VERY WELCOME.”

KARL HARDER, CO-FOUNDER ABUNDANCE INVESTMENT



EXECUTIVE

SUMMARY

We are facing a climate emergency, coupled with a range of other problems including poor housing, poor health and unemployment.

We need a Green Transformation, including new zero carbon housing, retrofitting existing housing to zero carbon, electrifying all road transport, and greatly expanding distributed generation and storage of renewable electricity. The scale of need calls for a large-scale, multi-year programme of projects.

Happily, having a large-scale, multi-year programme will minimise unit costs and give confidence and stability for supply chain development, employment and training.

This will require a massive investment over many years, but crucially it is investment that promises great returns, not only financial, but social and environmental.

We propose a new not-for-profit body for Wales, to set up transformation projects, raise finance, own infrastructure, collect income as rent, lease and power purchase payments and to give returns to investors.

There is a great appetite for ethical investment amongst individuals and soaring demand from institutional investors for opportunities to meet their increasing ESG (Environmental, Social & Governance) goals.

We propose the issue of Green Wales Transformation Bonds.

An online crowdfunding platform would open up literal and emotional ownership of the transformation to the people of Wales.

A low minimum investment threshold for individuals in Wales and a Welsh Government guarantee for small investors can widen accessibility.

A Welsh Government buy-back guarantee for small investors to give liquidity would further widen access to participation.

More traditional fixed 10 year bonds can be offered to institutional investors.

THESE PROPOSALS SHOULD BE SET

IN MOTION IMMEDIATELY AND

COULD BE CARRIED OUT WITHIN THE

EXISTING POWERS AVAILABLE TO

WELSH GOVERNMENT.

INTRODUCTION

WE OUTLINE A PROPOSAL FOR WALES TO ADDRESS THE SCALE AND URGENCY OF THE CLIMATE EMERGENCY WHILST ALSO HAVING OTHER POSITIVE OUTCOMES IN EMPLOYMENT, HEALTH, AVAILABILITY AND QUALITY OF HOUSING AND MORE.

IN NOVEMBER 2020 WALES GREEN PARTY POLICY UPDATE INCLUDED THE FOLLOWING:



A GREEN TRANSFORMATION FUND FOR WALES (GTFW)

Current Welsh Government funds for transformation are a tiny fraction of what is needed. New financial instruments are required to finance ambitious decarbonisation and Green New Deal measures.

This Green paper expands on the Green Transformation Fund for Wales proposal.

The GTFW would raise billions by issuing Green Bonds. This would meet the scale and urgency of the need to invest in carbon-reducing infrastructure. The GTFW would only fund projects that reduce carbon and deliver financial savings sufficient to repay the capital along with modest interest. The loans would run for the number of years needed to repay the loans with re-payments structured so as to be less than or equal to the savings made from the project. e.g. reduced electricity bill from changing to LED lighting or reduced fuel and maintenance costs after changing to an electric bus.

To complement the GTFW, task groups would be set up to identify potential projects, evaluate them, specify, contract installers/suppliers. Early examples would be: converting all public sector lighting to LED; installing rooftop solar across the public sector; making all new buses and recycling collection vehicles in Wales electric. Building of thousands of new zero carbon houses each year and deep retrofitting thousands of existing houses to near zero carbon would follow. Working at scale and having a multi-year programme of investments will reduce unit costs and give suppliers confidence in developing their capacity and taking on and training employees. Jobs will be created wherever people live throughout Wales. [1]

THE SCALE OF

THE TASK

The fossil fuels that we still use to generate electricity, heat our buildings and power our transport are taking us towards climate catastrophe. The air in our cities is toxic from traffic exhaust. Many of us live in homes that are cold and damp and damaging to health. Too many have no home at all.

We need to stop burning fossil fuels and provide homes for all that are healthy, warm and dry. All of our electricity must come from renewable sources. We must make all our buildings zero carbon, needing very little heating to stay warm and dry and healthy. All heating must be zero carbon. All of our transport needs to be zero carbon. All these changes need to be made as rapidly as possible. This will be a transformation for our daily lives.

Welsh government needs to meet the scale of this challenge with the powers that are available to it now.

GREEN TRANSFORMATION IS INVESTMENT

Carrying out the transformation proposed here will need huge investment. Investment is the right word here. Even in narrow financial terms many of the changes that we need to make will pay for themselves and even save money over their lifetimes. Making an existing house zero carbon is expensive but once it is done the house generates a lot of its own electricity and its heating costs are minimal. Maintenance costs are lower too. At present, electric vehicles cost more to buy than fossil fuel equivalents but cost far less for fuel and maintenance, so that lifetime costs can be the same or less.

Other costs are avoided too. A warm dry home with minimal heating bills avoids harm to physical and mental health. An electric vehicle means no toxic exhaust and less stressful traffic noise. On a larger scale, avoiding greenhouse gas emissions avoids their addition to climate damage.

The up-front cost of electric vehicles is falling fast as more are made and sold. Within a couple of years their purchase price will match that of fossil fuel equivalents. The more zero carbon homes we build and existing homes we transform to zero carbon, the lower the cost of each one will become.

In 2008 the Green New Deal Group published "A Green New Deal". [2]

It was the first of many related proposals since, including the movement for a Green New Deal in the USA, elements of covid stimulus packages around the world and the 2020 call to the UK government to issue a "Green+ Gilt" from the Green Finance Institute, Impact

Investing Institute and the LSE Grantham Research Institute on Climate Change and the Environment. [3]

The 2008 Green New Deal proposed the kind of major investment in energy efficiency and renewable energy generation projects that is proposed here. To drive this, it put forward measures on taxation, money supply and financial regulation which are beyond the current powers of Welsh Government. We support greater powers for Welsh Government and indeed, independence for Wales. However, the proposal outlined here, in keeping with the urgency of the emergency we face, could be enacted immediately by Welsh Government, (or a body created by Welsh Government) using only existing powers.

We propose raising finance through the issue of Green Bonds. This is within the current powers not only of Welsh Government, but also of lower level bodies, such as a local authorities.

Note that there are also many changes that we must make that don't offer a direct financial return. Restoring peatlands and planting trees are examples. It may be possible to develop a business model that allows them to give a direct financial return, for example through sale of quality carbon-offsets. If so, then they could be funded through the GTFW. If not, then they must be funded in other ways. This paper concentrates on proposals which can give a financial return but is not intended to suggest that these are the only things that need to be done, or the only things worth doing.

HOW TO RAISE FUNDS



EXISTING FUNDING

MECHANISMS FOR

GREEN TRANSFORMATION

GRANTS

Grants are appealing to the recipient as “free money” and simple for the provider in that once the money is allocated there may be no further administration. However the great limitation of grants is that once the money is gone it is gone. Funds for grants are limited so the impact is necessarily limited. In some cases grants are in effect offered to a few winners from amongst competing applications. UK Government support for electric buses is an example. The result is a token gesture in comparison with the need.

COMMERCIAL LOANS

Commercial loans set commercial interest rates and require security. For the potential borrower, decarbonisation is in competition with all of their other requirements for finance. They are unlikely to borrow for any project with a pay back period of more than a couple of years.

ZERO INTEREST LOANS

These use a fixed pot of money to operate a revolving loan fund. Unlike grants the money can be used many times over. Unlike commercial loans, interest rates are not a problem for the borrower. Repayments can be matched by savings and so be revenue neutral for the borrower if well structured. They are still

limited by a fixed pot of money and although administrative costs may be low they are not zero, so funds gradually decrease. Loans can be offered only for specific purposes. Robert Owen Community Banking Fund administer rotating loans to householders for energy efficiency measures on behalf of some local authorities. [4] This is good but on a tiny scale compared with the need. Salix Finance is another example and offers interest free loans to public sector bodies for qualifying energy saving projects. [5] Salix has been provided with £11.8m by the Welsh Government to implement energy efficiency projects in the public sector across Wales.

GOOD FEATURES OF SALX

- Clear criteria for what measures can be funded.
- Assessment tools for evaluating project proposals.
- Fully meets up-front costs of projects.
- Repayments mean that the money invested can be re-used many times over.
- Repayments structured so that they are slightly more than balanced by savings and so are at least revenue-neutral whilst repayments are being made.

LIMITATIONS

- A “fixed pot” of money that is far less than the scale of investment needed by the sector.
- Only available to public sector organisations.
- Depends on applications being made – which in turn depends on human resources and political will in the organisations that could apply.
- Procurement is done by each organisation, thus failing to gain economies of scale.
- Maximum allowed payback time excludes projects which would be cost-effective over a longer time scale.

COMMUNITY SHARE ISSUES BY COMMUNITY ENERGY GROUPS

Community energy groups are not-for-profit bodies mostly set up as Community Benefit Societies and run by volunteers, with in some cases a few paid employees. [5]

They finance renewable energy installations via community share issues or, in a few cases, bonds. Community shares have a fixed value and cannot be traded, but pay interest to shareholders. They are generally a 20 year investment which unlike money in a bank account is not guaranteed. The share issue in most cases pays for roof-top solar to be installed at no cost to a building owner. Over a 20 year contract, the building occupier pays the community energy group for solar electricity that they use (at less than grid cost). The community energy group also gets payments from a grid electricity supplier for surplus solar electricity exported to the grid. This income is used by the community energy group to pay interest and gradually return capital to its shareholders. Community energy groups mostly operate within a local area and as non-profits are trusted. They appeal to individual investors who either want to invest in their own

communities or in the transition to renewable energy – or both. They offer a way for individual small investors to put some of their money into something that they believe should be promoted.

Egni is installing rooftop solar on multiple sites across Wales, notably including many sites owned by Newport Council, including the largest rooftop solar installation in Wales on the Newport Velodrome. [7] In October 2020 Egni reached its £2m target for its community share issue and extended the target to £3m. Welsh Government Energy Service played a very active part in making this possible. There are sadly few examples of councils or other public bodies working with community energy groups in this way and particularly at this scale.

GOOD FEATURES OF

COMMUNITY SHARE ISSUES

- Trusted as not-for-profits.
- Allow individual investors to support something they believe in.
- Reduce costs and future energy cost uncertainty for host roof organisations.
- Accelerate decarbonisation.

LIMITATIONS

- Obtaining host roof organisation agreement is very challenging.
- 20 year term of investment excludes many who would otherwise like to invest.
- Risk for investors compared with bank accounts.
- Need for 4-5% interest payments to attract investors (given the risk and long term) limits what projects are viable.

THE VALUE OF CROWDFUNDING AND

LOCAL OWNERSHIP

Development projects can be much more socially acceptable when there is widespread access to participation in ownership.

Ownership can become emotional as well as literal.

In the Netherlands the Nieuwe Molenaars (New Millers) co-operative is developing the largest community energy project in Europe. In an area of more than 300 square km, more than 90% of the farmers, local businesses and residents are co-op shareholders. Their investment together with leveraged bank loans will total over 400 million euros. The co-op is replacing 220 wind turbines built 20 years ago, with 83 much larger modern turbines which will triple total energy generation. [8][9]

In France, commercial company EDF is using crowdfunding open only to the local population, to fund a 14 MW onshore wind farm in Yonne [10] and to part fund the construction of the 500MW Fécamp wind farm off Normandy.[11] The campaign for the latter aims to raise €750,000 in total, with local individuals each being able to make an investment ranging from €20 to €2,000.

COMMUNITY MUNICIPAL

INVESTMENT (CMI) BONDS

Community municipal investment bonds are in many ways the closest thing to our proposal for the GTFW to be already in use. CMIs allow public bodies to raise funds through a crowdfunding platform. Crowdfunding is the sourcing of finance from many small contributions rather than a few major sources. Although most people are probably aware of crowdfunding as a way of collecting donations, there is also a well established investment crowdfunding sector in the UK, regulated by the

Financial Conduct Authority (FCA). Investment crowdfunding platforms use the low administration costs made possible by operating online to connect parties seeking finance with small investors who are offered a financial return. Whilst commercial borrowers have been using crowdfunding for over 10 years, public bodies have rarely tried it.

This is probably down to a lack of awareness of crowdfunding coupled with the historically low cost of public sector borrowing giving little incentive to explore alternatives.

The idea of Community Municipal Investments originated from Financing for Society, a collaborative research project with the Bauman Institute at the University of Leeds, Leeds City Council, Bristol City Council and Abundance Investment. [12]

It was then developed in “Turning Words into Action”.A project funded by PCAN - The Place-based Climate Action Network, which describes itself as “a collaborative project between University of Leeds, Queens University Belfast, the London School of Economics and the University of Edinburgh. translating climate policy into action ‘on the ground’ to bring about transformative change.”[13]

The aims are to: provide a competitive source of capital for public bodies; show the public that public bodies are acting on Climate Emergency plans; allow the public to participate; allow philanthropic donations (by investors choosing to forgo interest payments).

From Turning Words into Actions:

'Technical description of a CMI

A Community Municipal Investment is a bond issued by a local authority direct to the public via an investment crowdfunding platform. An investment crowdfunding platform is an electronic platform regulated by the Financial Conduct Authority which arranges and administers investment between retail investors (the public) and, in the case of CMIs, councils. For the council the platform means investors, who invest as little as £5, are efficiently administered, meaning there is no additional work for the treasury management team when raising money from the public versus sourcing it from traditional institutions.

The bond finance is treated in the same as any other long-term borrowing, therefore a CMI can be used to supplement, diversify or, where appropriate, replace sources of borrowing such as the PWLB to fund specific infrastructure projects and programs, or to refinance existing loans. With a climate focused Community Municipal Investment, the money raised must be used on projects which form part of the council's climate emergency plan.

Due to the low-cost nature of crowdfunding, Community Municipal Investments can be issued via a low-risk, easy to use online process at rates which comfortably undercut Public Works Loan Board ("PWLB") borrowing rates and terms.

Key Features

- Bonds can be issued from £0.5m to hundreds of millions
- Bonds can be issued as Maturity, Annuity or Equal Repayment loans
- Borrowing is treated the same as any other council long term borrowing
- Councils do not require a credit rating and they incur no additional audit costs
- Crowdfunding platform administers the investors, creating no additional work for the council Treasury Management Team
- Citizens can invest from as little as £5
- Councils can communicate with investors on an ongoing basis.'

Abundance Investment was founded in 2009 as a crowdfunding platform to offer only ethical and socially beneficial investments that contribute to a green economy. CMIs were co-developed with Abundance Investment and are offered through the Abundance Investment platform. [14]

So far, CMI bonds have been issued by West Berkshire District Council and Warrington Borough Council. Several more are in development and should be on offer soon.

A review of options available to local authorities for financing green initiatives was published by Local Partnerships and the Local Government Association in November 2020. In its conclusions it stated "Local authorities are well placed to access cheap debt finance, both through Public Works Loan Board and through the emerging Community Municipal Bond (CMB) market. The ongoing review of the PWLB may make CMBs increasingly attractive as a funding option for local authorities going forward, providing not only affordable finance, but also the opportunity to connect local people to projects in their area." [15]

GREEN TRANSFORMATION FUND

FOR WALES BONDS

We propose a new not-for profit body to drive forward decarbonisation investments in Wales and to issue bonds to raise the funds for these investments. Issuing bonds needs no new legal powers. The amount that could be raised is limited only by the appetite of potential investors and so could be equal to the scale of the opportunities.

An initial bond issue could be guaranteed by Welsh Government and thus not require a credit rating. Providing the opportunity for individuals to invest through a crowdfunding platform is highly desirable. A dedicated bilingual online platform featuring only GTFW projects and bonds would be needed. Given their work on developing Community Municipal Investments, Abundance Investments and Dr Mark Davis would be an obvious source of expertise and experience to contract to set up the online platform.

Once a portfolio of projects builds up, providing a predictable long-term income stream, a favourable credit rating should be possible. At this point the crowdfunding from individuals could be supplemented by institutional investors such as pension funds.

One barrier for many individual investors is the long term nature of some investments and concern that they may suddenly need their money at some time in the future and not be able to access it.

An online secondary market as run by Abundance Investments helps by giving some confidence that bonds could be sold if necessary. Welsh Government could help further by giving a guarantee, up to some limit, to buy back from small investors, in the event of no sale in the secondary market.

The guarantee would very likely never be taken up but its existence might greatly increase crowdfunded investment.

It may be possible for investors to hold GTFW bonds within an Innovative Finance ISA. At present this is not possible for CMLs, although that may change soon.

WHAT SHOULD BE FUNDED

WHAT TYPES OF PROJECTS

SHOULD BE FUNDED AND WHAT

SECURITY WILL FUNDING HAVE?

- Projects that get us nearer to net zero carbon
- Projects that taken together, pay for themselves financially with modest interest over their their lifetimes
- Projects which will not need to be reversed later in order to reach net zero

This last point needs a little explanation so here are a few examples.

- Heating using energy from incineration can be presented as making carbon savings. This depends on assuming that the heat would otherwise have been provided by burning natural (fossil) gas and that the waste would have been incinerated anyway with the resulting heat wasted. However, we know that we should be reducing waste in general and in particular waste that cannot be recycled or composted. Using heat from incineration is at best a stop-gap and at worst an incentive to continue producing unrecyclable waste.
- Hybrid vehicles can have a lower carbon footprint and produce less toxic exhaust than fossil-fuel-only vehicles. Buying a new hybrid vehicle locks in emissions for its lifetime which could have been avoided by buying a zero emission vehicle.
- Insulation measures that are short of zero carbon such as installing double glazing, which locks in for years lower performance than the triple glazing which should be the minimum standard now.

The next section looks at a range of types of projects that should be funded. It is not intended as an exhaustive list but still sets a transformational programme.

ROOFTOP SOLAR, SOLAR CARPORTS

AND LED LIGHTING

Projects on the public sector estate, such as LED lighting in all public sector buildings and rooftop solar on all hospitals and solar carports on hospital car parks, would be a good place to start, as the public sector is paid for by all and exists to serve all. Well chosen projects can bring down energy costs and carbon footprint at the same time. Projects carried out in the public sector should be actively used as case-studies to promote the uptake of similar projects in the private sector. This would be greatly helped by excluding rooftop solar from business rates valuation. Use of standardised assessment tools and legal instruments such as air-space leases and power purchase agreements can help to minimise the “soft costs” of projects. Solar installation companies have suffered from years of “boom and bust” as demand has peaked just before a reduction in feed in tariff, and then fallen dramatically, to then rise gradually until the next boom when the next reduction deadline loomed. Having a large scale multi-year programme of installations can reduce uncertainty and provide stability for installers.

GETTING A 100% RENEWABLE ELECTRICITY SUPPLY WITH THE GREATEST EFFECT FOR WALES

•Buying on a “green” tariff from a supplier who generates or buys a mix of renewable and non-renewable electricity is worse than useless. Suppliers are allowed to say that a tariff is 100% renewable on the basis that they buy at least as much electricity from renewable sources as they sell on this tariff. However that makes no difference to their overall fuel mix and just as they notionally supply “100% renewable” customers, their other customers are notionally supplied with the residual mix (overall mix less the renewables notionally supplied to renewables customers). The “renewable” tariff just gives the misleading impression of making a positive difference. Buying from a supplier which generates or buys electricity only from renewable sources such as Good Energy, Ecotricity or Octopus does more to accelerate the transition we need.

ON-SITE GENERATION AND PPAS

Forward thinking large companies go further, by installing roof-top solar on their sites and buying the additional electricity they need directly from renewable electricity generators via power purchase agreements (PPAs). Companies including Google, Amazon and Walmart use on-site generation plus PPAs with renewable suppliers. The City of London Corporation has just become the first public body in the UK to sign a long term renewable PPA. The £40m agreement to buy the output of a solar farm in Dorset, will provide about half of the Corporation’s electricity, give certainty over the cost of this electricity and save about £3M over its 15 year span. [16]

This is the model that the public sector in Wales should follow: Maximising on-site solar generation and purchasing the additional electricity required directly from renewable electricity generators in Wales via PPAs. For maximum effect the PPAs should be used to give investor confidence for the development of new renewable generation in Wales. This could be solar, wind or micro-hydro and owned by commercial companies based in Wales, community energy groups, or the GTFW itself. This route will do the most to promote renewable generation in Wales.

ROOFTOP SOLAR ON THE PUBLIC SECTOR

Rooftop solar pays for itself fastest on sites where all, or almost all, of the solar electricity is used on site rather than exported as surplus. For this reason sites that are in use throughout the day and most days of the year are the best place to start. Hospitals are an obvious choice. Some already have some solar but there is scope for far more. The cost of solar panels is still falling so that the payback time for potential projects keeps getting shorter.

NHS England estimates that installation of solar PV across the entire NHS England estate would cost “£1.9 billion paid back over 15 years, with a net saving of £1.2 billion – and would need to be considered for early implementation to maximise benefits.” [17] (page 23)

Once hospitals have been equipped, attention can move to other sites such as schools, colleges and universities.

The ‘Low carbon impact strategy 2019/20’, from Transport for Wales, includes a commitment to “Install Solar PV panels at our 20 largest station buildings and two depots”. [18] Covid may have impacted on financing of this but the GTFW could ensure it goes ahead.

SOLAR CARPORTS

Solar carport costs have fallen to the point where they are now very cost-effective wherever the electricity produced will be used in adjacent buildings and for electric vehicle charging points. [19][20] It is likely that, even with maximum rooftop solar, hospitals will still not meet all of their summer electricity use from the sun. A solar carport covering the hospital car park could make up the difference. The cost of static “behind the meter” batteries is also falling rapidly and with a couple of years will be cost-effective for overnight use of solar electricity generated during the day. Electric ambulances are currently being trialled and could be charged using a solar and battery combination. [21]Leisure Centre car parks are another obvious location for early installation of solar carports. In time all day-time use car parks should be equipped with EV charging points and solar carports.

LED LIGHTING

LED lighting uses less electricity than alternatives giving the same levels of lighting.

It also has a much longer lifespan so the frequency, cost and disruption of having to replace failed lights is much reduced. The payback time for changing to LED lighting is very short – anything from 5 years down to less than 2, depending on how much of the time the lights are on. A rapid changeover to LED lighting for all street lights and in all public sector buildings in Wales would give a fast reduction in carbon footprint and quickly pay for itself.

NEW ZERO CARBON HOUSES

A zero carbon standard for new houses would have been introduced in 2016 but was cancelled by then chancellor, George Osborne. This was convenient for the small number of major house builders but very costly for those buying new houses. House builders

do not face the increased lifetime costs resulting from poor energy efficiency.

Modern Methods of Construction move as much as possible of the construction away from the building site, into a factory environment. Here the weather outside is not a problem, advanced machinery and automation can be used, high quality control levels can be maintained and waste minimised. Large components can be made such as a whole side of a roof with integrated solar panels, an entire insulated wall with windows installed or a “volumetric” unit such as a “plug-in” bathroom. Time on-site is minimised as once ground-works have been done the factory produced units just need to be assembled and finished.

A multi-year building programme for thousands of zero-carbon houses per year would give maximum economies of scale and promote the development of a supply chain in Wales with confidence to invest in equipment and take on and train a skilled workforce. This should be a major focus for the GTFW.

New Zero Carbon Social Housing

The construction of new zero-carbon social housing could see the new houses owned by the GTFW but managed by local authorities, housing associations, housing co-operatives and co-housing groups. Not selling the houses could increase the availability of housing to those most in need and keep the focus on lifetime costs and benefits rather than short term profit at the long term expense of householders.

Interestingly Sero homes are planning long-term rental rather than sales for their zero carbon housing neighborhood at Parc Hadau. [22]

The Solcer House project by Cardiff University showed back in 2015 how much could be done on a limited budget and that was without economies of scale and with the cost of photovoltaics much higher than now. [23]

ZERO CARBON DEEP RETROFIT OF

EXISTING HOUSING

Refurbishment programmes to improve energy efficiency in existing housing have long suffered from trying to spread the benefit of a tiny amount of funding as widely as possible.

EPC ratings have typically been raised from appalling to merely very poor.

Retrofit to higher standards has been seen as prohibitively expensive. The model developed by Energiesprong in the Netherlands makes these views obsolete.[24]

Now Energiesprong UK is looking for partnership opportunities here.

HOW ENERGIESPRONG BUSINESS

BUSINESS MODEL WORKS

- An up-front investment pays for a deep retrofit to zero carbon standard.
- Tenants have the same monthly expenses as before (but in a warm, dry house).
- Money that they would have spent on energy bills pays for an energy service plan.
- This guarantees air temperature, and an allowance of hot water and electricity.
- The initial investment can be paid back over 30 to 40 years.

HOW ENERGIESPRONG DEEP RETROFIT

IS CARRIED OUT

As much as possible of the work is done off-site with high levels of quality control – as in the use of modern methods of construction for new-build houses. On site time and disruption are minimised. New insulated external walls (made to measure off-site) are fitted along with high performance external doors and windows and a new insulated roof with integrated solar panels. An air to water heat pump, and mechanical ventilation with heat recovery are also fitted. If there was a gas supply it is disconnected.

Energiesprong provide a methodology for carrying out retrofit and recouping the funds invested. They look to develop local supply chains to construct and fit components.

So far Energiesprong UK has delivered a small number of pilot projects in the UK and is now set to work on hundreds of houses, having won twice in June 2020 in the Whole House Retrofit competition run by BEIS. However to do this properly Wales needs to have a multi-year programme for thousands of houses per year.

This would give maximum economies of scale and allow the development of a supply chain in Wales with confidence in investing in equipment and taking on and training staff.

This should be a major focus for the GTFW.

"OUTSOURCES PUBLIC SERVICES"

There are "outsourced public services" such as care homes and leisure centres. The contracts for these providers should include a requirement for carbon-reduction measures. To make these affordable, zero capital cost options should be offered by the GTFW.

CARE HOMES

Privately owned care homes receive much of their funding from local authorities. Rooftop solar here could be owned by the GTFW with the care home buying solar electricity via a power purchase agreement. LED lighting could be provided under an energy service contract (where installation is done at no cost to the building occupier and money saved through the reduced electricity bill is used to pay for it in instalments). Both of these business models are already well-established.

LEISURE CENTRES

Leisure centres are often owned by a local authority but operated under contract by a third party which pays the energy bills. Again a combination of PPA for rooftop solar and energy service contract for LED lighting could be used. Solar Carports could add to rooftop solar.

BUSES

Bus operators are mostly privately owned but gain income from local authorities. New electric buses could be owned by the GTFW and leased to operators. Vehicle leasing is long established. The charging infrastructure could be set up in the same way. By procuring buses on an all Wales basis unit costs can be minimised. It may make financial sense for newer diesel buses currently in service to be converted to battery electric operation rather

than scrapped. [25] If this is planned on an all Wales basis then there may well be scope for having a conversion plant established for this in Wales.

RECYCLING AND WASTE COLLECTION

VEHICLES

Recycling and waste collection vehicles should also be offered as new electric vehicles leased from GTFW. As with buses it may make sense to convert newer diesel vehicles to battery electric operation rather than scrap them. A plant in Wales could carry this out alongside electric conversion of buses. New electric recycling collection vehicles are produced by adding a battery electric system to standard chassis. [26] This could provide a long term role for the plant alongside electric vehicle maintenance.

ELECTRIC TAXIS

As with buses, electric taxis are available but presently have a much higher capital cost (though lower running costs) than a diesel equivalent. Requiring all new licenced taxis to electric would be reasonable if operators are offered an affordable leasing arrangement by the GTFW.

MAKING PROJECTS HAPPEN

PROACTIVE PROJECT DEVELOPMENT

Making the Green Transformation happen is not just a question of making funds available. It is essential that good choices are made in specifying what specific kinds of measures should be funded. Local authorities and other bodies in Wales, mostly lack staff with sufficient expertise and time to specify projects. Salix funding helps to some extent by listing types of measures that Salix will fund and the criteria that projects need to meet to secure that funding. Salix staff help with applications for Salix funding. However local authorities may lack the human resources even to start the process. Working at an all-Wales scale and geographical reach, with multi-year programmes, can reduce unit costs and give suppliers confidence in developing their capacity and taking on and training employees. We think the GTFW should identify potential projects, evaluate them, specify, and contract installers/suppliers. It would have to work with other public bodies including Transport for Wales, local authorities, health boards, universities, further education colleges and emergency services.

A FUND FOR WALES COMPARED

WITH LOCAL AUTHORITY BONDS

There is a known appetite amongst small investors for opportunities to invest in their own communities. The development of community municipal bonds and their sale through the Abundance Investments crowdfunding platform taps into this. Community share offers by community renewable energy groups also appeal to this sense of place. Setting up a Green Transformation Fund for all of Wales rather than having funds at more local levels,

might miss out on this sense of place.

However, we feel that *so long as the projects invested in are clearly and transparently creating local benefits throughout all of Wales*, then a fund for Wales, operating bilingually in Wales, for Wales could both appeal to and enhance a sense of shared identity in Wales.

In an operational sense having a single body for Wales allows a scale of operation and multi year programmes that can reduce unit costs and give suppliers in Wales confidence in developing their capacity and taking on and training employees. Having a single body also allows the development of specialist, continuously updated, expertise in the rapidly evolving fields of renewable energy, energy storage, zero carbon transport and so on, that are essential to our rapid transition to net zero.

A NEW INSTITUTION - RATHER THAN

A NEW ROLE FOR AN EXISTING BODY

The Green Transformation fund could be a new task for an existing body. Development Bank Wales has made loans to finance renewable energy projects within Wales. However DBW also quite properly funds projects which do not accelerate our path to carbon net zero but are merely neutral in this regard. We feel that it would be better for clarity of purpose to set up a new body dedicated to the Green Transformation. A not-for profit company limited by guarantee along the lines of Glas Cymru/Dwr Cymru seems a likely best approach. The new body would raise finance via bond issues, oversee a secondary market for bond holders to sell bonds, make interest payments to bondholders and issue and administer green project loans and their

repayment with interest. It would also retain ownership of leased electric vehicles, zero-carbon houses etc. In addition to these traditional financial roles, the new body would also proactively identify potential projects, evaluate them, specify and contract installers/suppliers. Energy Service Wales is currently engaged in identifying and evaluating potential projects renewable energy projects in Wales and could give a starting point for developing these activities in the new body.

CONCLUSION

We are faced with a climate emergency.

The changes we need to make will take years but by acting at scale and having a multi-year plan we can bring about a transformation by 2030.

The time to act is now.

TONY COOKE FOR WALES GREEN PARTY

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**PROMOTED BY CHRIS SIMPSON ON BEHALF OF WALES GREEN PARTY,
BOTH AT THE GATE, KEPPOCH STREET, ROATH, CARDIFF, CF24 3JW.**