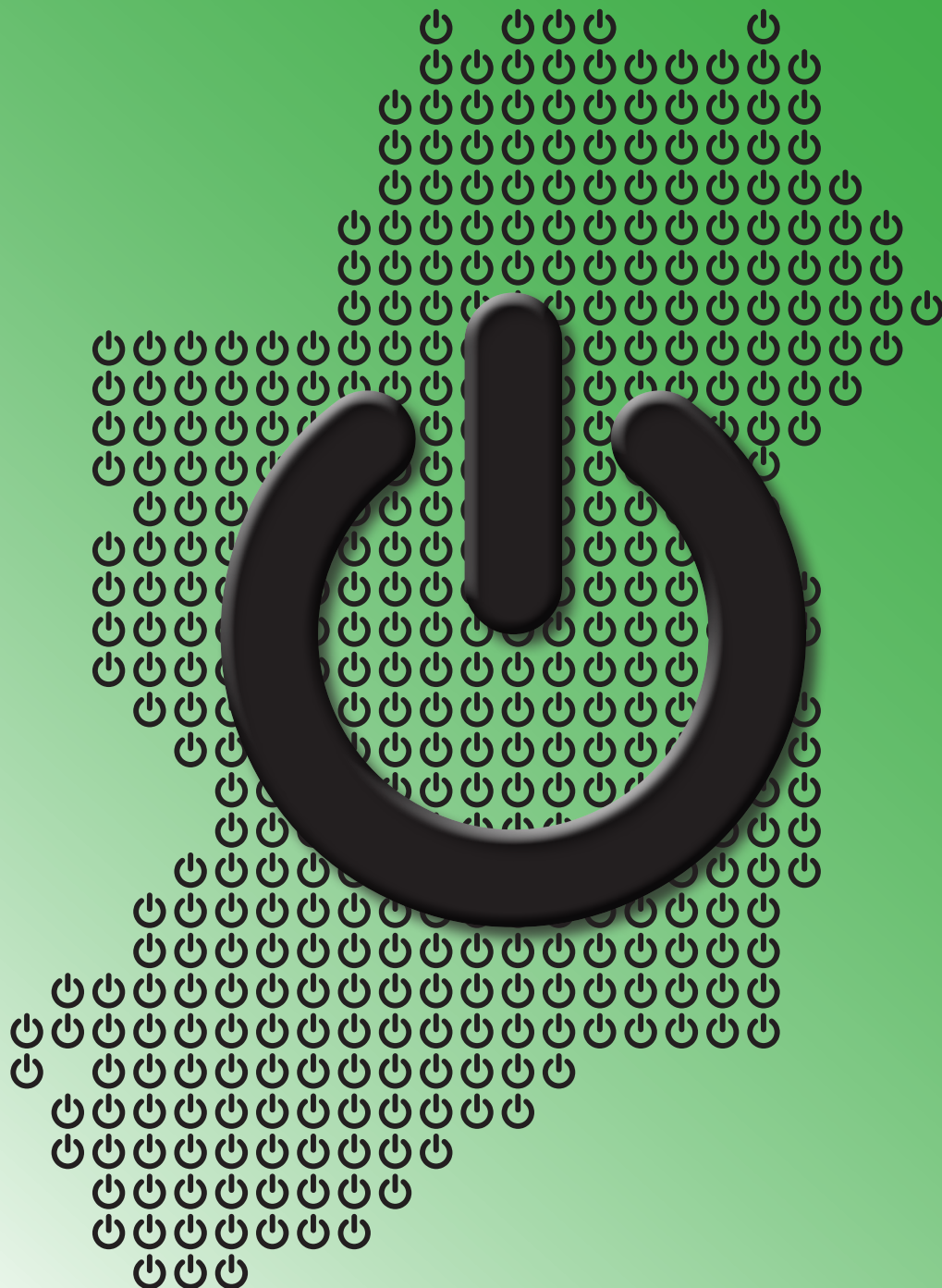


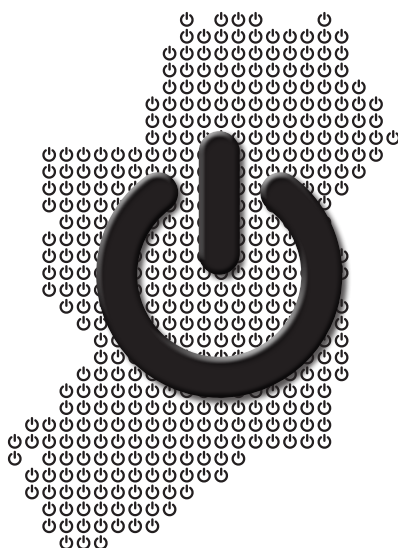
POWERING IRELAND 2030



Proposals for accelerated transition
to climate-friendly electricity generation

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Sinn Féin proposals for accelerated transition
to climate-friendly electricity generation



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Introduction

Ireland's over reliance on imported fossil fuels contributes to global warming which threatens society as we know it now. Households and businesses across the island are already increasingly vulnerable to extreme weather events. Yet, despite what is clearly in front of us, governments are not preparing to take the steps needed to address the situation. The Irish government's Mitigation Plan is inadequate, it will not do enough to ensure we meet our carbon emission reduction targets and avoid monumental fines for failure. The North forms part of the British government's commitments, yet there is great uncertainty as to what if anything will happen post Brexit to address environmental issues.

Ireland needs ambitious, sustained and coordinated action to accelerate the transition away from environmentally devastating fossil fuels and to build our renewable capacity. A cohesive and visionary policy agenda inclusive of public and private investment, taxation, financial supports for householders and small businesses, legislation, planning processes, and regulation must be actioned to this end.

Such urgent and radical action is required in response to the threats posed by climate change across a wide range of fields with Transport, Agriculture and Energy being key sectors. Electricity generation is the focus of this particular document. Renewable electricity generation will of course be a key element in the transition from fossil fuels in the areas of transport and heat also. This document which lays out Sinn Féin's policy priorities for the generation of electricity in the years ahead will guide Sinn Féin's approach to budgetary, legislative and other decisions in the Assembly, the Dáil, the European Parliament, and local Councils across the island of Ireland.

Absent of any guaranteed plans in the North, it is clear that the Irish government's energy policy in Project Ireland 2040 which includes the all-island Single Electricity Market, will not deliver the transformation that is needed. The plan is short-sighted and over-reliant on onshore wind and finite fossil fuels such as natural gas. The plan also sits alongside a policy agenda, shared by the Tory government in Westminster, that favours tax breaks for the wealthy at the expense of the Capital Budgets, grant supports, and the Research & Development required to realise a major reduction of our carbon footprint.

Sinn Féin believe we must instead prioritise investment in the achievement and delivery of a wider portfolio of energy sources including a much greater emphasis on off-shore wind and sustainable replacements, such as biogas and to a lesser extent biomass, for fossil fuels currently underpinning dispatchable power i.e. power that is available on demand.

Sinn Féin's twin priorities for energy policy are as follows:

- » that Ireland's energy is sustainable and secure;
- » that Ireland's energy is affordable.

Sinn Féin's vision can be achieved by:

- » redirecting public, semi-state and private investment into developing and deploying a new energy mix;
- » supporting householders, communities, farmers and small businesses with a broader range of grants and supports enabling them to both reduce and produce the energy we need.

Sustainable and Secure Energy

Current energy mix

Figure 1 below outlines the sources that made up our energy mix for electricity in 2016.

Figure 1. 2016 Electricity Demand 38.3TWh

Energy Source	Proportion of electricity generated
Oil	1%
Peat	7.7%
Coal	15.6%
Natural Gas	50.6%
Wind	20.4%
Hydro	2.3%
Other renewables and wastes	2.5%

This energy mix, coupled with our inadequate grid infrastructure, means Ireland's energy system is unsustainable and insecure.

Current energy supply is unsustainable

Fossil fuels are both finite and environmentally devastating. The carbon emissions produced by the burning of fossil fuels is contributing to global temperatures rising. This is resulting in climate change which threatens invaluable natural ecosystems and increases the frequency of extreme weather events.

Ireland is bound by EU obligations to increase our renewable electricity production as part of efforts to curtail the global temperature increase. With our current energy mix and on current government policy trajectories we will miss our targets.

Current energy supply is insecure

Our electricity production is over dependent on imports, especially imports via Britain. Risks to our security of supply are thus heightened further by Brexit. With the ESRI estimating, that as a result of our very great dependence on Britain for gas, in the case of an exceptional international event, the daily economic cost to the South of any prolonged interruption to Ireland's gas supply would range from €350 million to €640 million with 80% of this accounted for by lost electricity.

An insecure energy supply threatens economic growth and many companies cite availability of a secure and predictably priced energy supply as a pre-requisite for investment.

Future energy mix

Figure 2, below, depicts an ambitious and achievable energy mix that Sinn Féin believes we should aspire to by 2030. This is illustrative of what is possible and the final portfolio will hinge on, for example, investment trends, planning, and storage technology advancements.

Figure 2.

Figure 2. 2030 Electricity Demand 46.7TWh (This provides for a projected rise in electricity demand of 22% by 2030)

Renewable source	Percentage of consumption
Biogas	10%
Offshore wind	25%
Onshore wind	20%
Solar	8%
Tidal/Wave	5%
Biomass	4%
Storage	5%
Hydroelectric	3%

Under our proposals, renewables would increase from 25% to 80% of our energy mix by 2030, with 58% of our energy coming from intermittent sources. The potential in microgeneration although difficult to fully quantify, with self-consumption, battery back-up and supply to the grid, will also form an important part of the energy mix going forward.

It is imperative that we achieve the right renewable energy mix including a combination of not just intermittent sources but also sources that can supply dispatchable power.

Intermittent energy sources such as wind and solar are not continuously available for conversion to energy. The limitations of intermittent energy sources are self-evident - you can't just turn it on when you need it and it can go to waste if it is produced during times of low demand.

Dispatchable energy sources, by contrast, refer to those that can generate power at any time and therefore can be synced with demand - in our current energy mix, coal, peat and, particularly, gas are performing this function.

Biofuels – dispatchable power

Biogas is a fuel that is naturally produced from the decomposition of organic waste such as food or agricultural waste. The waste is broken down in an anaerobic environment, meaning an environment which is absent of oxygen, when this occurs it releases gases which can be used as a fuel source.

It has the potential to replace some of the fossil fuels that is currently providing on-demand or dispatchable power in our electricity mix. Alongside being suitable for electricity production, it could also be used for transport fuel and heating. Biogas is already in use on a limited scale in Nurney, Co. Kildare for example. It's very great prospective value was recognised by a European Commission report in March 2017 that ranked Ireland amongst the EU Members States with the highest potential for biogas use.

Biogas recovers waste materials that would otherwise pollute landfills, prevents the use of toxic chemicals in sewage treatment plants, and does not require fossil fuel extraction to produce energy. Local Authorities could take on a role to ensure the greatest volume possible of available, suitable waste, is directed to Biogas production. Biogas will also



provide a revenue stream for farmers. It could be an indigenous, renewable, low carbon emission energy source and, if combined with carbon capture, it is a zero emission fuel. Carbon capture is explained on page 8.

Like biogas, biomass could also replace some of the fossil fuel on which we currently rely for dispatchable power. Biomass involves the burning of organic matter to generate energy and it is in fact already in use in Edenderry. However, in that instance imported palm oil husks have been a key component and this is not sustainable.

The extent of the role for sustainable biomass in electricity generation should be determined following a comprehensive spatial mapping exercise of the island having regard to both energy and food security. Its potential for electricity generation would certainly be on a smaller scale than biogas. However, undoubtedly marginal lands exist which are not suitable for agriculture but on which willow, for example, could be grown. Additionally agri-waste such as straw, hedgerow and forestry trimmings may all be used in biomass energy production. Biomass electricity generation may also be combined with carbon capture technology and the excess heat may also be usable.

While biomass has a role to play in electricity generation, government schemes should not support the burning of material where the material is not produced sustainably, is being imported and should primarily be developed with the possibility of emerging carbon capture technology being incorporated, and the development of this form of energy must be further determined by its environmental benefits through its overall level of carbon emissions.

Sinn Féin supports a mix of first and second generation biofuels that meet high sustainability criteria. We acknowledge that, if biofuels are not planned and managed well, there can be a negative effect on the environment by way of indirect land use change. When biofuels are obliged to meet high sustainability standards, there can be further benefits such as, for example, the production of protein as a by-product.

Bord na Mona and Coillte in the South are to form 'Bioenergy Ireland' which aims to stimulate the supply of biomass. This should also work with the Forestry Service in the North.

Both biogas and biomass have the potential to create jobs in Ireland and could provide an alternative or additional source of income for farming communities.

Some of our existing power stations across Ireland are approaching the end of their useful lives. Project Ireland 2040 envisages converting the currently coal-based Moneypoint to burn natural gas before 2025 at an estimated cost of €1 billion. While Sinn Féin welcomes this commitment to phase out coal-combustion, the government's plan is short-sighted because natural gas is also a finite fossil fuel, albeit cleaner than coal.

Consideration should be given to converting existing fossil fuel based electricity plants which are currently approaching the end of their useful lives over to biogas and to a lesser extent biomass or to constructing new plants instead along with carbon capture technology.

Wind – intermittent energy

The majority of our renewable energy production to date has come from onshore wind. Onshore wind is currently the cheapest source of renewable energy to produce. It is a valuable source of energy which must continue to be utilised as part of our future energy mix.

Governments should do more to promote better community engagement around proposed wind projects and opportunities for full or part-ownership by local communities should be encouraged. In these arrangements, shares of the energy and revenue generated come back to the local owners and community. Templederry Community Windfarm in Tipperary is one such example of community ownership.

When it comes to additional renewable energy production, offshore wind offers far greater potential than onshore. We have one of the most advantageous coastlines for the development of offshore wind energy. A 2014 report by the Department of Communications, Climate Action and Environment has shown that Ireland's offshore wind energy resource has an output potential of at least 4,500 Megawatts out to 2030 – this is equivalent to the electricity required to power almost 3 million homes. Despite the scale of this huge, untapped offshore wind potential Project Ireland 2040 aspires to support just the same volume, i.e. 4,500 Megawatts of additional renewable electricity from all renewable sources – a stark illustration of the current government's lack of ambition.

Advancements in floating wind farm technology are ongoing and the world's first floating wind farm became operational in Scotland, 25km off the coast of Peterhead, in 2017.

Although requiring initially greater capital investment than onshore wind, these costs are reducing significantly. This has been recently evidenced in Britain where costs dropped dramatically in the auctions for offshore wind.

Ireland should learn lessons from countries like Scotland which simplified planning approval processes for offshore projects by introducing a single consent body and Denmark which has invested public money, through the State owned grid operator, in building infrastructure out to the offshore wind turbines thereby generating income for the state into the future in addition to enabling greater renewable energy production.

Solar power – intermittent energy

Solar power represents a further under-utilised energy source in Ireland for which readily available technologies exist. Positive change is on the horizon with applications to connect to the grid from ground mounted solar amounting to over 3,000 Megawatts as of March 2018. However this is short of the future potential considering, for



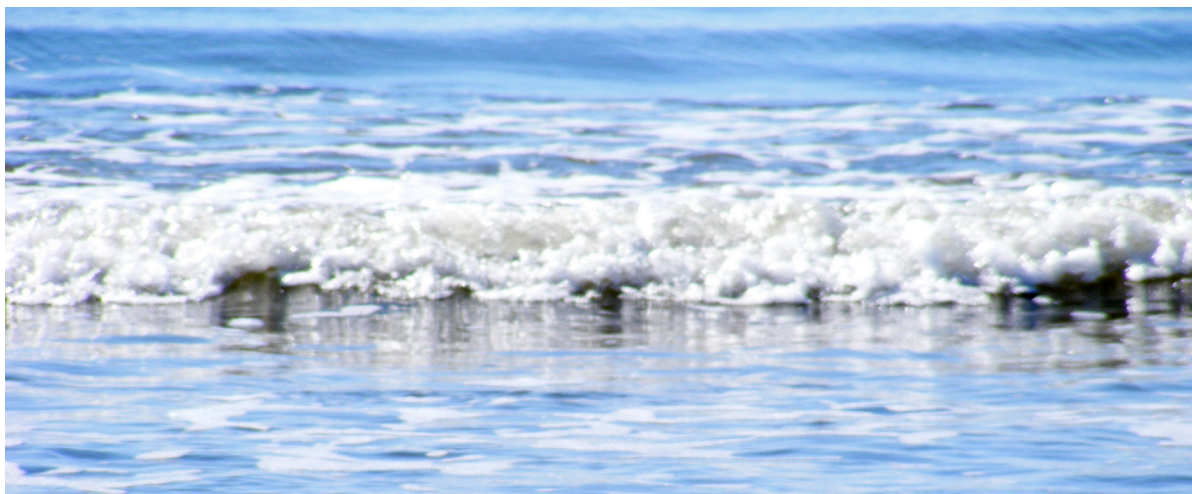
example, Britain which has a relatively similar climate to Ireland and has one of the largest solar energy resources in Europe.

Roof-top solar can also play an important role in micro-generation which we deal with below.

Wave and tidal – intermittent energy

Tides are forecastable and regular giving this energy source a significant advantage over other intermittent sources such as wind.

Unfortunately, at this time, wave and tidal energy technologies do not offer an available cost-effective alternative to fossil fuels. That said, given the scale of it's potential for Ireland, R&D investment in wave and tidal technologies should be prioritised and EU funding opportunities for such projects should be maximised also.



Hydroelectricity – dispatchable power

Hydroelectric power is a renewable energy source that can complement intermittent sources by providing on demand or dispatchable power. We currently produce a portion of our electricity, 388 Megawatts, from hydroelectric power at a number of plants including for example the Ardnacrusha plant on the River Shannon. While there may be geographic barriers to the development of further largescale plants the feasibility of this should be examined as part of the spatial mapping exercise we propose and there is certainly scope for small scale hydroelectricity to be developed across many locations on the island.

Microgeneration

Microgeneration technologies such as roof top solar and small scale wind allow energy consumers to become energy producers. The use of microgeneration can be for self-consumption, with battery backup and/or to feed energy back into the grid.

An unpublished Sustainable Energy Association of Ireland paper equated the potential from microgeneration at one fifth of current island wide demand.

Microgeneration technologies can include roof mounted solar, small scale wind or combined heat and power (CHP) with renewable sources. Considering the significant access to water in Ireland, there may also be potential for household or community hydro energy projects.

Microgeneration will have a particularly important role to play as we advance our transition from petrol and diesel to electric vehicles with home charging.

Microgeneration should be supported in appropriate residential, farming, small business, community and public buildings if we are to maximise its great potential.

Greater storage capacity and interconnection

Storage technologies will allow us to capture energy from intermittent sources that would otherwise go to waste. In 2015 for example, according to a report by Eirgrid and SONI, “5.1% of the total available wind energy could not be accepted onto the grid either because it occurred at time of low demand or because of local transmission constraints”. Storage has a critical role to play in the advancement of our new energy mix.

Storage technologies are constantly developing and can take different technological forms including battery, pumped, compressed air and flywheel technology storage.

The most advanced storage technology is battery and pumped storage. Currently in Ireland, there is one largescale battery unit at Kilroot power station in county Antrim that has the ability to store 10 Megawatts and plans are in place for a ten-fold expansion of its range. Pumped storage is another option and Ireland already has one facility in operation based at Turlough Hill, Co Wicklow, which has the capacity to provide almost 300 Megawatts. Pumped storage can be combined directly with wind, however there are geographical limitations on its potential. Compressed air storage is yet another evolving technology. A project, which benefited from €6.5 million of EU funding, is being constructed in Larne by Gaelectric and could provide for 330 Megawatts.

A further technology in development is Hydrogen Gas Storage which uses excess intermittent electricity to create hydrogen gas.

There is no single storage solution rather the development and delivery of a suite of sustainable, environmentally friendly energy storage systems, many of which are still emerging technologies, should be encouraged.

The North-South interconnector will be vital to ensuring security of supply for Ireland. It is also vital to facilitating the linkage and greater use of energy from renewable sources across the island thereby helping avoid the type of waste of intermittent energy referred to above.

Sinn Féin notes that the proposal for the development of a North-South interconnector continues to be frustrated as a result of planning and judicial delays. We also note that such delays are likely to continue so long as the project fails to receive the acceptance of the communities through which this infrastructure will pass.

It is our view that the imposition of high-voltage pylon supported lines will never receive the necessary public acceptance and therefore authorities, North and South, should direct that the project be undergrounded in line with international best practice.

Further interconnection including the proposed “Celtic Interconnector”, a sub-sea cable to France, will provide a connection to continental Europe which will be essential for the future development of renewable energy in Ireland providing export markets for surplus energy.

Carbon Capture Storage

During our proposed accelerated transition away from fossil fuels natural gas will necessarily continue in use for a time and therefore developing Carbon Capture Storage (CCS) will be important. This is a process where gas power plants are fitted with filters to capture emissions. These gases are then stored in underground formations. For example, the depleted gas fields at Kinsale Head off the coast of Cork, is likely a suitable location. Likewise, as mentioned earlier, CCS enables lower carbon emission renewable fuels like biogas and biomass to become zero carbon emission.

The feasibility for carbon capture should be factored into the planning of future power plants.

A diverse portfolio of intermittent and dispatchable energy, with key roles for the sources and technologies outlined in this section i.e. biofuels, wind, solar, wave, tidal, hydroelectricity, microgeneration, greater storage and interconnection, is needed for Ireland’s new sustainable, secure and affordable energy mix. This new energy mix which is achievable by 2030 will replace the use of coal, peat and oil for electricity production and, unlike Project Ireland 2040, it will also significantly cut the use of the finite fossil fuel natural gas.



Accelerated transition to secure and sustainable electricity generation

In order to accelerate the proposed transition from the current unsustainable and insecure energy mix depicted in Fig 1 to a more sustainable and secure energy mix like that depicted in Fig 2, Sinn Féin propose:

12 measures to end dependency on fossil fuels

1. Divest from fossil fuels for example by obliging public bodies such as the Strategic Ireland Investment Fund to move its money out of fossil fuel companies and prohibiting such future investment in the industry or removing the investment capital of pension schemes such as the Local Government Pension Scheme in the North which currently invests over £300 million in fossil fuel companies with redirection where possible into green bonds.
2. Introduce a moratorium on any further new exploration for fossil fuels in Ireland – our dependence on fossil fuels must be phased-out and directly replaced by renewable capacity which should be increased year on year.
3. Recognising that the EU Emissions Trading System has failed to act as an effective economic instrument in terms of incentivising energy producers to move away from fossil fuels due to the low price of carbon that has prevailed - Direct energy producers away from using fossil fuels by introducing a legal obligation on energy generators to produce a minimum and annually rising percentage of their energy from renewable sources.
4. Oppose the construction of new energy infrastructure whose primary purpose is to use fracked gas or nuclear fission power which are especially environmentally destructive fossil fuels.
5. Conduct a comprehensive spatial mapping exercise of the entire island of Ireland and it's surrounding waters to identify the optimal locations and potential output for the many different energy technologies in a joined-up manner and having regard to the simultaneous need to prioritise carbon sinks and food security when it comes to land use.
6. Reform planning processes, to provide greater certainty for security of supply and potential investors including the establishment of a single planning body for the approval of offshore applications similar to that introduced in Scotland. And introduce planning conditions that could require prospective very high energy users, such as data centres for example, to produce or contribute financially to the production of additional renewable electricity at least equal to their needs.
7. Re-direct investment towards R&D in new technologies, deployment of available sustainable energy technologies and installation of the infrastructure that is necessary to feed these into the grid including the €104 million of the PSO which currently supports the use of peat.
8. Ensure the investment in excess of €13 billion by State Owned Enterprises in the South on infrastructure,

renewables and interconnection anticipated by Project Ireland 2040 and equivalent investment in the North works together to the objective of delivering an energy mix like that depicted in Figure 2.

9. Increase annual Capital Budgets from the Exchequer, recognising that our public capital investment currently falls far short of such investment levels in comparable European countries, prioritising the delivery of the new sustainable energy mix and provide for state construction and ownership of key infrastructure.
10. Increase expenditure on and expand existing schemes North and South that support energy efficiency, such as for example the Affordable Warmth Grant Scheme and the various schemes and pilots operated by the Sustainable Energy Authority (SEAI) for householders, communities and businesses to both increase eligibility and extend the technologies supported.
11. Build on and expedite existing grant schemes and pilots in order to support the purchase of a wide range of microgeneration technologies by householders, farmers, communities and businesses than currently provided for and also enable energy generated from these to feed into the grid as provided for in Sinn Féin's Microgeneration Support Scheme Bill.
12. Establish an equivalent to the SEAI for the North to work with the SEAI in the South and a new North-South Implementation Body to further bolster co-operation in the wider field of Energy. Vest in this key roles and responsibilities to help drive forward this transition to a low carbon energy system including through:
 - » advising government,
 - » administering funding programmes and schemes,
 - » promotion of research including partnerships between Universities, Industry and the State sector,
 - » serving as a one-stop-shop offering 'start to finish' advice to individual households, businesses, the public and community sector organisations around what they can do from the start , and
 - » generally promoting culture change across the island.





Affordable Energy

In addition to pursuing secure and sustainable energy, we should also prioritise affordability.

Previous measures from governments purportedly aimed at transitioning to a low carbon economy have demanded that low and modest income households shoulder an unfair portion of the burden of transition. In recent years, the St. Vincent de Paul associated a rise in fuel poverty in the South with increases to carbon tax and the Public Service Obligation (PSO) levy which supports the production of renewable energy. The fuel poverty rate is estimated to stand at 28% and 42% of households in the South and the North respectively.

The design and regressive structure of the PSO levy has meant that consumers have not enjoyed the full benefit of international energy price reductions, because, while the wholesale price of electricity has fallen, the PSO supports for the production of wind energy have increased thereby cancelling out potential savings for consumers. In addition, because it is set at a flat rate for every household regardless of income or level of electricity use, it is regressive. Research cited by the ESRI in 2014 found that “the cost of the PSO levy relative to income, is 12 times larger for the households in the lowest income decile than for the average of the five wealthiest income deciles”.

Because the PSO component of households’ energy bills is expected to grow with the expansion of renewables it should be restructured and made progressive. Options such as, for example, ‘Incremental Block Pricing’ were identified by ERSI research and should be considered to this end. PSO reform should also be made to ensure high energy users such as Data Centres, for example, pay more.

Sinn Féin are adamant that behavioural levers must be designed and applied in a fair way and, if measures result in increased bills for householders, they should be accompanied by compensatory measures to protect those households with low or modest incomes including and especially those most vulnerable to fuel poverty such as people with disabilities, lone parent households and pensioners.

In addition to reform of the PSO, in order to further tackle fuel poverty and make household energy bills more affordable Sinn Féin propose:

1. All new houses to be built to the highest energy efficiency standards and new housing developments to include facilities/technologies for micro-generation including rooftop photovoltaic solar power units combined with storage to maximise the retention of energy produced. This would enable householders reduce their energy bills and even generate a source of income if surplus energy from microgeneration is sold back to the grid.

2. Expand eligibility for the Affordable Warmth Grant Scheme in the North and the Warmer Homes Scheme in the South which offers some energy retrofitting to certain low income households free of charge and extend what is covered by these schemes, for example, to better promote the use of renewables and to hasten phase-out of single glaze windows.
3. Expand the Better Energy Homes scheme in the South which offers grants to all homeowners including landlords to cover more sources of microgeneration, for example, small scale wind and solar PV along with battery storage and explore introducing a facility for grants to be paid upfront rather than after the fact to enable greater uptake by modest income households.
4. Learning from the positive experience of other countries, such as Germany for example, introduce a subsidised low cost green loan scheme to enable the purchase of energy efficiency and microgeneration technologies by a wider cohort of households so that increasing numbers can enjoy the resulting lower energy bills.
5. Parallel adjustments be made to schemes supporting households struggling with their energy bills such as the Fuel Allowance and Household Benefits Package in the South and Winter Fuel Payments in the North should climate mitigation measures result in increases to the bills faced by households at risk of fuel poverty.
6. Deliver price reductions, identified by Eirgrid and SONI, which are currently being forgone by building greater interconnection across the island.
7. Introduce regulations to ensure that people using pre-paid meters can avail of discounts currently limited to direct debit customers.





8. Conclusion

Sinn Féin's twin priorities are that Ireland's energy be:

(1) Secure and Sustainable and

(2) Affordable

These priorities underpin the proposals for electricity generation outlined in this document.

We advocate the development of a diverse portfolio of energy sources combining both intermittent and dispatchable energy with key roles for sources and technologies including biofuels, wind, solar, wave and tidal, hydroelectricity, microgeneration, greater storage and interconnection.

This new more secure, sustainable and affordable energy mix is achievable by 2030. It would replace the use of coal, peat and oil for electricity production and, unlike the Irish government's Project Ireland 2040, it would also significantly cut the use of the finite fossil fuel natural gas.

The accelerated transition to low carbon, climate-friendly electricity generation outlined in this document is achieved by redirecting public, semi-state and private investment into developing and deploying this new energy mix; and by supporting householders, communities, farmers and small businesses with a broader range of grants and supports enabling them to both reduce and produce the energy we need.



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