

Paper of

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1 Introduction

This submission seeks to establish a context for the changes we need in society and the decisions and supports the state should consider making building from examples in Tipperary. Other papers will cover the main changes we need in society namely:

- Recognising we need to removal all Fossil fuels from our energy systems by 2050.
- Wind, Solar and bio-energy as primary energy supplies into the future.
- The opportunity of electrification of heat and transport as enablers of a decarbonised society
- The need to engage each and every citizen as energy citizens.

2 Demonstration projects from Tipperary

A. Templederry Community Windfarm.

The community windfarm consisting of two 2.3MW windfarms produces sufficient power to power 3500 homes on average. It was originated as an economic development action from the parish council in 2001. Subsequent to that, the project opened to investors in 2002 and raised sufficient finance, in conjunction with the local development company to complete a planning application and grid connection. The windfarm received planning without objection, but the grid delay from 2003-2007 resulted in a re-submission for the planning permission. There were a number of delays and setbacks but the project was eventually built in 2012 and has been successfully operating since. A number of spin off activities has resulted including Irelands only community energy supplier and a number of potential solar farms are in development. Templederry Windfarm was supported with significant free advice from the Tipperary Energy agency and the local development company over the period of 10 years. This independent technical advice was instrumental in the realisation of Templederry community windfarm, which to this day is the only community windfarm.

B. Superhomes – Ireland’s deep retrofit pilot

Tipperary Energy Agency has been implementing many European, national (SEAI) and locally funded domestic energy retrofit/ renovation projects since 2006. It was realised at a local level that there was a significant gap in the ambition and results of most of our retrofitting programs, with ventilation, airtightness and renewable energy heating systems being overlooked. It was felt that the continued shallow retrofit was insufficient to result in meeting any of Ireland’s Climate and energy goals. A pilot call for proposals was launched by SEAI in 2015 under the netter energy finance program. Tipperary Energy Agency applied for and was successful in delivering 70 homes that have been renovated to a deep retrofit standard including PV and an air source heat pump, saving 60-70% of the energy and carbon dioxide emissions. Most of the homes reach an A rated standard and are heated to 18-20 degrees. These renovations are somewhat innovative technically, mainly building on the utilisation of a package of industry leading products and services.

The significant key innovation is in the methodology of supporting the householder in doing the deep retrofit. The Tipperary Energy Agency advise the householder on the works required, tender the project to a panel of contractors, supervise the works and ensure contractors complete the works to a high standard. In addition the TEA is performing an analysis of the performance and has teamed up with Limerick institute of technology for a 2 year research program to further optimise the offerings. As dealt with above, this retrofit that includes the electrification of heat essentially brings the home to 2050 ready and in essence removes the need for further upgrading the home.

The enabler of this program is independent technical advice for the homeowner, which is critical to the support of the homeowners, as often if it is an intermediary selling the system, they will often sell what they wish to sell, not what is good for the homeowner.

C. Tipperary County Council

Tipperary County council has, over the past decade, completed over 80 sustainable energy projects across its significant number of facilities. It has retrofitted low energy lighting, insulated buildings, upgraded mechanical and electrical systems, installed biomass boilers, Solar panels, heat pumps and a large amount of energy efficiency controls in its facilities. It has surpassed the 2020 target of 33% energy savings by 2020 already and is the leading local authority and one of the leading public bodies. It received the public sector energy award for its reduction in energy intensity.

Tipperary Energy Agency, which acts as its energy manager has supported the technical and financial methods of delivering these upgrades. Tipperary County council is the largest member organisation of the Tipperary Energy Agency board.

D. Sustainable Tipp

Tipperary Energy Agency with the support of the Local development Companies, Tipperary County council and other local Partners (Local enterprise office, Teagasc, Limerick institute of Technology Tipperary) have written a sustainable energy action plan for the county. This plan, in line with the EU Covenant of Mayors movement seeks to reduce Tipperary's energy related carbon dioxide emissions by 30% by 2020. A Successful application has been made to the European investment Bank to invest 1.5Million Euro in the Tipperary energy agency over the next 3 years to deliver €37Million investment, deep retrofitting 500 homes, upgrading 100 community and commercial buildings, including significant actions to scale up the renewable heat part of Tipperary in addition to the retrofitting of 4000 public lights in the county. The investment program is on track and has delivered the first €4M investment in 2017.

Sustainable Tipp is centred around the Tipperary Energy Agency delivering independent expert advice on a non-profit public good basis to the county of Tipperary and supporting over 200 jobs in the County. It is essentially supporting the Energy transition to happen at a local level. Much of the capital investment will be funded by SEAI and other public supports.

E. Local Energy Agencies

While this paper gives examples from Tipperary, local energy agencies are active throughout Europe attempting to support their communities in achieving the energy transition. In Ireland there were 16 energy agencies originally supported from the European union. Today there are only a small number of local energy agencies that are active that support the wider communities with technical expertise and programs. It has been a challenge for these small number of organisations to provide public good supports without public financing.

The above Tipperary examples are all supported examples of where individuals and organisations were supported and advised on how to embark on the transition from fossil fuels and have all successfully completed some of the journey.

3 Enablers for a Societal Transformation

A. A Clear Plan & Resources to Implement it.

Anyone engaging in the climate change debate understands that we need a plan to reduce our reliance on fossil fuels. Any plan worth implementing requires milestones and real actions. We have a National Climate Change Mitigation Plan in Ireland. This plan identifies the good work underway, but falls short and lacks concrete milestones, lacks specific ambitions on how we achieve the 2020 - 2050 reductions. While it would be impossible to suggest that we know all that is needed to achieve 2050 targets, we should be able to identify what and how we get to 2020 and have a fair idea of 2025 reduction measures.

An example of one action is the planned renewable heat incentive. This was discussed behind the scenes in 2010 when the previous renewable heat support ended. It was officially announced by the Minister for Energy in 2013 and will likely be open in late 2018. This length of time for a policy from 2010 to 2018 is primarily due to a lack of resources available to research, design, consult and implement the policy at department level.

Why is our plan and policy implementation falling short?

- The scale of the challenge is very large
- There is little political and societal support
- There are only a very small number of policy makers in the Department of Communications, Climate Action and Environment.

If we are to achieve a radical change, we need to invest now in the people that will guide us, and hold them accountable to produce a robust planned energy transition from fossil fuels.

B. Regulation & Incentives to reduce use of Fossil Fuels

For Ireland to reduce its use of fossil fuels, we need regulation and incentives to opt for alternatives.

- Ireland is expected to build large numbers of new homes soon to cater for an increasing population. It is important that these homes are compatible with the future. Building regulations should encourage homes that are zero carbon at the point of use. For a new home, the cost difference of doing this is minimal or zero¹ with over 50% of new one-off homes in Ireland adopting heat pumps for heating. We will have to now incentivise (or penalise) the other 50% of new build homes to remove their new oil or gas boiler before the end of its operational life.
- We need to phase out oil and solid fuels from existing buildings. We current grant aid their upgrading. Many other countries have phasing out programs that utilise a combination of carbon Tax, grants for replacing them with heat pumps and independent advice to ensure people gain confidence in adopting new technologies.
- We need to increase the uptake of electric vehicles through tax and incentives. While Ireland has grants for EV's, the combination of low range and poor charging infrastructure is leading to a slow uptake of EV's in Ireland.
- The Public Sector should lead by example. Tipperary County council has reduced its energy use by over 40% since 2006 and has 70% of its heat from low carbon heating systems.

¹ [Silken Park](#), a development by Durkan Homes, emits no greenhouse gases. The homes are already compatible with 2050 and carry the same price as equivalent homes with fossil fuel.

C. Enabling the Energy Citizen

In Ireland, it is quite rare for an individual to be receiving an income from the sale of electricity or to be part of an energy cooperative that supplies heat or electricity. In many European countries (including the UK), a very large number of individuals and SME's have solar electricity (Photovoltaic or PV) panels on their roof producing electricity for their own consumption and what they do not use is exported onto the national grid and a small payment is received. In other countries, citizen cooperatives have energy supply companies (heat & electricity), where the goal is to reduce the cost of electricity to their members. We have many water supply cooperatives (group water supplies) that operate on exactly the same manner as these district heat companies.

This facilitation of electricity supply, either individually or cooperatively, is one of the key reasons why many European people are more engaged with the energy transition and more likely to invest their money in reducing their energy use. In Tipperary, Energy cooperatives are supplying energy, retrofitting homes and planning renewable energy infrastructure. They are driven by supporting local jobs, reduction in energy poverty and rural development. One clear catalyst in Tipperary is the support of the Local Development Companies, Local Authority and the local energy agency. This triple-line support is rare in Ireland with only a handful of local energy agencies (originally 16) surviving the economic downturn of the last 10 years.

It is clear from our European colleagues that one major catalyst of engaging people in what we collectively need to do is the ability to become energy producers. In Ireland, this is not facilitated, with the current proposed (2018-2025) Renewable energy support scheme also proposing to exclude citizens individually from the electricity market, even though the same citizens will be charged to support the larger electrical energy suppliers. The reasons put forward for this reluctance is noted as to prevent the increase in costs to all energy consumers. However, there are several solutions to this challenge if the policy makers can navigate around the vested interests who wish to capture these subsidies:

- The support scheme could be extended to citizens at the same rate as large exporting suppliers at no extra cost.
- Some limitations could be applied with the scheme used to incentivise electric cars and heat pumps by allowing a higher export amount if there is a larger consumption of electricity on site.
- The electricity exported could be limited to 1/3 of the capacity installed and a payment amount reflective of the non-exported renewable electricity could be used.

Many commentators (The National Economic and social council, Friends of the Earth, At Taisce) have all called for independent advisors to support communities and citizens to facilitate the energy transition at a local level. This is available in Tipperary and some other counties to some extent, but is limited nationally.

Without clear intentional changes, we will not have people engaged in the energy transition, our politicians will therefore not be engaged, and our policymakers will be under resourced and under supported in any significant policy change (e.g. a carbon tax).

D. Driving the Renovation of our Buildings

It is well known that our building stock needs to undergo significant renovation. The average energy rating from home energy audits is D1 compared to a target by 2050 of a minimum of A3 with a renewably heating system. For the state to become a leader greenhouse gas emissions reduction for heating, it is necessary to improve the thermal performance of the housing/ building envelope and change the heating system. This 'retrofit' will involve the fitting of insulation, improvements in sealing to reduce air leakage and forced air circulation. Once this has been done, the house is then suitable for the fitting of a low carbon heat source such as a heat pump. The measures will gener-

ally bring the house to an 'A' rating. Where a heat pump is fitted, the home is on a pathway to zero carbon through the decarbonisation of electricity. It will need no further work to reduce emissions; it is '2050-ready'. In addition, there are significant benefits in health and comfort.

Why are people not renovating? The barriers to retrofit are well documented academically and are outlined below:

- Building owners do not know how to complete the retrofit.
- They often do not know why they should complete a retrofit (knowledge of savings, comfort).
- They do not know who is the most suitable contractor to do the work
- They do not trust that the improvement will be done to the standard nor achieve the energy performance / results.
- They lack access to financial supports or low cost loans.
- They often do not have the money to afford the large investment with relatively long payback periods.

Research elsewhere has shown that one key factor in promoting retrofits (in addition to incentives) is the availability of expert, independent advice to the home-owners. To improve the take-up of these retrofits, move towards the national targets and bring the quality of life benefits, it is essential to establish an efficient network of advice centres that is available to the community.

In addition to the clear advice, other countries have institutionally supported low interest long term finance for building renovation including any available subsidies.

E. Supporting Citizens Locally

One clear theme emerging from many sources is the need for "independent actors" to facilitate the energy transition and give homeowners advice, communities support on their energy transition plan, public bodies and private companies technical support for reducing their energy use.

In the past, societal changes such as the modernisation of agriculture was led by local independent advice in the form of TEAGASC, Rural Electrification was completed at a parish level by the ESB. Currently the state utilises local sports partnerships, community childcare committees, Money Advice and Budgeting Service (MABS), Citizens Advice Centres to deliver national programs at a local level. If we are to succeed in renovating every building in the state, ensuring all new builds are low energy, all communities have some form of energy plan, all companies and state bodies decrease their CO2 emissions by 3-5% per annum, we will need some structure or service at a local level.

In the region of Upper Austria (approximately the size of Munster), the regional government has had an energy advice centre (Upper Austrian Energy Agency) located in all the main cities and counties where access to this advice is free to citizens, and heavily subsidised for companies. These advisors ensure that people know why, who and how to improve their energy efficiency and remove fossil fuels. In addition, there are a series of incentives and carbon taxes to encourage everyone to reduce fossil energy use. Upper Austria has moved from 2% to 50% renewable heat since the early 1990's.

In Tipperary, The Tipperary Energy Agency has been working as a non-profit public good social enterprise for almost 20 years, supporting the local authority and citizens to reduce energy usage. The Agency is a collaboration of the Tipperary County Council, Limerick Institute of Technology Tipperary, the local development companies and other local public representative citizens and organisations. It has 22 staff that work on supporting fossil energy reduction and is primarily supported by fees for services. It receives no national funding outside of competitive funding research and grant applications. While the energy transition has only started in Tipperary, it is further ahead than in

most counties and it is primarily since the Tipperary Energy Agency is available to enable and support citizens and communities at a local level.

If we are to support the people of Ireland to embark on the energy transition, national programs with local governance and delivery must be part of the overall approach to making Ireland a leader on climate change.