Gluaiseacht Submission on the Micro-generation Support Scheme (MSS)

Summary

- The climate crisis means we need to urgently reduce greenhouse gas emissions. We need to transition our energy system away from fossil fuels to a completely renewable energy system, but more importantly we need to reduce our overall energy demand, which is a “fossil fuel era” demand.
- We want the energy system to be run for the public good. A system run for profit is fundamentally incompatible with energy demand reduction.
- We reject the principle that this MSS has to pay for itself - it should be paid out of general taxation, to lessen the risk of poorer people subsidising wealthier people.
- This MSS should specifically incentivize community projects and not focus solely on individual homeowners. Collective community energy projects have a greater ability to bring benefits of renewable energy to the whole community rather than just those owning their own homes.
- The suggested BER of a C rating or better would currently exclude 45% of the houses in the country. It violates the principle of "equity" which is supposedly sought after in the design of the scheme.
- The 6/11kW limit on the size of microgeneration is very low in comparison to similar schemes in Europe and is needlessly restrictive.
- Participation in this scheme should be clear and straightforward, in contrast with the Government consultation documents for this scheme.
- Of the policy options available we would suggest the Feed-in-premium or feed-in-tariff, but not as described in the Ricardo consultants report

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Introduction

Ireland has negligible citizen ownership of renewable energy production thus far. Despite currently being reported to have the second highest percentage of electricity provided by wind energy, we have chosen to exclude citizens and communities from this. In contrast other countries such as Germany (42% of the renewable electricity generated in Germany in 2016 came from projects carried out by the citizens or with strong public participation) and Denmark have empowered their citizens to get involved in renewable energies.

With this in mind, it is first of all worth exploring why this way of working and thinking about something that would clearly be beneficial to citizens and communities in Ireland has been ignored for so long and instead a centralised electricity generation system has been chosen over the last few decades.

Historian Diarmaid Ferriter has written many times about the centralisation of political power in Ireland. In an article by him in the Irish Times entitled "Why Irish local government is so useless" he wrote:

“In his provocative observations on local government in the 1980s, historian Joe Lee caustically noted the glaring gap between the much-vaunted self-reliant community, so intrinsic in terms of propaganda about the ability of the Irish to run their own affairs, and the stern realities of the centralising state.

Historically, Lee contended, England had moulded Ireland in its own centralising image and Ireland had been content to stick with this colonial imposition. Noting that the most successful European countries operated more decentralised decision-making systems, and that European regional local authorities accounted for a much higher proportion of total public expenditure than in Ireland, he remarked, “But decentralisation isn’t good

enough for Ireland. It is scoffed at by the wise men as cumbersome and inefficient. Why? Partly, of course, as a rationalisation of the natural lust for power … but intellectually and emotionally it is because we have conditioned ourselves to think English." [1]

If the Irish state is to really enable citizens to get involved in electricity production, it will have to overcome it's tendency and historical tradition of centralising everything and help to truly empower communities and citizens.

The fact that Ireland still only has one community owned wind farm is a monument to this centralising state.

The behaviour of various State agencies should be analysed further to underline this lack of regard to truly empower citizens in the Energy transition thus far:

SEAI

SEAI has a long history of being absent in promoting any citizen and community engagement in electricity generation. It has never promoted Ireland's only community owned wind farm Templederry, as a model that other communities should attempt to emulate. Despite this absence, the SEAI have been recently rewarded by being tasked with supporting communities through the Renewable Electricity Support Scheme (RESS).

The SEAI's indifference to community and citizen energy production is in contrast with its close links with big wind power companies.

It is noteworthy that Brendan Halligan served as Chair of SEAI for 7 years from 2007 until 2014 while at the same time serving as Director of Mainstream Renewable Power. It is worth noting that Mainstream Renewable Power was just recently sold and was valued at €1bn. It was totally inappropriate, as evidenced by Mainstream Renewable Power CEO's letter declaring there was no conflict of interest.[2]

The current Chair of SEAI Dermot Byrne has also previously served as a director in wind operator Element Power.

ESB

Community Power have listed many problems that they have had with ESB & ESBN, including the extremely long wait for grid connection for community renewable projects, and even for the processing of applications[3]. This illustrates the conservative nature and extreme lack of vision that is apparent with the ESB.

The current board of ESB Networks seems to be made up of 3 ESB Executive Staff along with the CEO of Ireland largest business organisation - Chambers Ireland and the DG of Engineers Ireland. Where are the people that will advocate for the interest of citizen or community energy?

An Energy Budget - The Bigger Picture

> *SEAI have produced a range of future energy scenarios highlighting an absolute increase in demand [8,9].The increase in demand may increase the levels of self-consumption rate above the 70% threshold, therefore reducing the amount of electricity purchased from the grid, thereby further reducing energy spend across the sectors. As a result, the demand analysis is expected to be conservative in non-domestic sectors.*
>
> **- page 18 Public Consultation on a Micro-generation Support Scheme in Ireland 2021**

Measuring current energy usage/demand is a useful stocktaking exercise to see where we are but we should be cutting our cloth according to our measure.

A better stock taking question is: What electricity production can we reasonably hope to achieve without sacrificing the landscape, environment and our health to excessive mega projects? The answer to this would be our energy budget, and we should then try to match our consumption to stay in budget. Just as a wise minister for finance will try to balance annual expenditure with annual income, a wise minister of energy should do something similar. The fossil fuel era is over. Our energy budget will quickly have to be reduced to our renewable resources.

This would include matching consumption to periods of strong winds or bright sunshine depending on wind and solar generation fluctuation. A "traffic-light" system with discounted power available during strong wind/sunshine seems sensible to help balance demand to supply.

Furthermore demand doesn't just grow by itself in a vacuum. It's subject to government policy decisions. We need a policy of energy descent that reduces overall energy demand - not techno-fixes to extract an unreasonable "fossil era" amount of energy from nominally renewable resources.

Making better use of the existing grid

While renewable energy is favourable to fossil energy, there is no free lunch and anything can be done badly. All of the hardware for electricity generation and transmission will involve mining and energy intensive production with its attendant waste and emissions. In this context it is reasonable to consider the embodied energy and ecological consequences of expanding the grid to service the continued expansion of the planned wind mega projects. It is a mistake to follow the fossil fuel model of generation and distribution for renewables. Fossil fuel occurs in pockets but renewable energy by its nature is more evenly spread across the surface of the earth. Instead of massive grid expansion to handle ever more wind mega projects, we should consider supporting massive well-distributed community home and farm solar PV installations. This will stress neither the grid nor the receiving communities. It is often said that smaller distributed installations won't be as cost effective per kWh as large ones, but that is without taking into account the massive expense required in grid upgrade to service the megaprojects, and the immeasurable differences in goodwill and learning.

We have to stop plundering the earth now, even in the name of renewable energy projects. Let us instead examine how we can use the existing grid and support microgeneration up to the point the current grid can manage and see where that gets us.

As a dept of energy spokesperson recently said:

> *"There is little or no requirement for extra investment in the grid to support microgeneration. ESB Networks has published a report that assessed the impacts of increased penetration of micro-generators on their network. They have concluded that all electricity consumers could install up to 3kW in rural areas and 4kW in urban areas with little or no impact on the network,"*
> -https://www.rte.ie/news/environment/2021/0204/1194990-electric-grid/

Taking an average figure of 3.5kW, and multiplying by the number of electricity consumers in the republic of 1.8 million, means that we could theoretically install 6.3GW of microgeneration using just the existing grid. This is 150% the national installed wind capacity of 4.155GW as of the end of 2019, which is the second highest grid penetration of wind in the world. This is the direction we need to go. The massive grid upgrades that Eirgrid talk about are necessary mostly for concentrating power and revenue into the pockets of the wind developers and servicing the data centres.

If this newly microgenerated power is solar, it will be much more valuable than the equivalent capacity of wind. It will come during the daylight hours, matching demand well, and more so in the summer, balancing the existing wind resource which is greater in the winter. When it is very windy at night we already export power. Pushing more wind projects won't help security of supply much - when there is no wind there will still be no wind power. They will just cause more grid upgrades, pylons, increase community alienation from renewable energy and be felt in everyone's PSO levy. Microgenerated solar PV can take a huge bite out of the daily fossil base load. That should be a primary objective.

Last December a new record was set for electricity demand in Ireland at 5,357MW, in turn causing an amber warning. If by 2030 some of the predictions of electricity growth are met (30% increase from data centres, 1 million electric cars & 600,000 heat pumps) then that figure could easily be doubled, unless large changes of energy usage and mindset occur. It is most important that the mindset of continuous growth and instant availability that was allowed to take hold with the growth of fossil fuel usage, isn't just transferred to the same mindset under renewable energy. We see that an energy system that is run for profit is fundamentally incompatible with this need for energy demand reduction.

Building Energy Rating

There is a suggestion in the consultation documents to restrict access to MSS to houses with a BER rating of C or better. The argument given is "energy efficiency first" but in practice it will needlessly discriminate against many households. This would currently exclude 45% of the houses in the country or 64% of the houses built before 2000. It violates the principle of "equity" which is supposedly sought after in the design of the scheme.

A better option would be to systematically bring houses up to a CER of B or better with a widespread renovation scheme and change building regulations so that inefficient homes no longer exist.

As the BER is a calculated measure of average energy use per meter squared of a building it fails to capture actual use due to individual site specific circumstances such as:

- User behaviour
- Occupancy
- How well a house is built as opposed to how well it should have been built

Even taking the notional BER values as a reference, a typical 3-bed semi detached house with a D1 BER rating will cause 5 tonnes of CO2 per year while a typical C2 rated large house will cause 12.7 tonnes - over two and a half times the CO2 rating of the smaller house. The rating would be sensible if you expect the larger house to on average house over 2.5 times the number of people, but the reality is that it will on average house a similar number of people, just with more money or a higher income. Furthermore the larger building will have taken more energy in materials and construction. Should the government also penalise for embodied energy of a building in the MSS scheme?

Table 2: Indicative annual CO_2 emissions and running costs for different rating bands for space and water heating

Rating	2 Bed Apartment		3 Bed Semi-D		4 Bed Semi-D		Detached House		Large house	
	Area (m^2)	75	Area (m^2)	100	Area (m^2)	150	Area (m^2)	200	Area (m^2)	300
	Tonnes CO_2	Cost (€)	Tonnes CO_2	Cost (€)	Tonnes CO_2	Cost (€)	Tonnes CO_2	Cost (€)	Tonnes CO_2	Cost (€)
A1	0.4	€140	0.5	€190	0.8	€280	1.1	€400	1.6	€600
A2	0.8	€280	1.1	€380	1.6	€560	2.2	€800	3.2	€1,100
A3	1	€350	1.4	€470	2	€700	2.7	€900	4.1	€1,400
B1	1.3	€440	1.7	€590	2.5	€900	3.4	€1,200	5	€1,800
B2	1.6	€570	2.2	€800	3.3	€1,100	4.3	€1,500	6.5	€2,300
B3	2	€700	2.7	€900	4	€1,400	5.3	€1,900	8	€2,800
C1	2.4	€800	3.1	€1,100	4.7	€1,600	6.3	€2,200	9.4	€3,300
C2	2.8	€1,000	3.7	€1,300	5.5	€1,900	7.4	€2,600	11	€3,900
C3	3.2	€1,100	4.2	€1,500	6.3	€2,200	8.4	€2,900	12.7	€4,400
D1	3.7	€1,300	5	€1,700	7.5	€2,600	10	€3,500	14.9	€5,200
D2	4.4	€1,500	5.8	€2,000	8.8	€3,100	11.7	€4,100	17.5	€6,100
E1	5	€1,800	6.7	€2,300	10.1	€3,500	13.4	€4,700	20.1	€7,000
E2	5.7	€2,000	7.6	€2,600	11.4	€4,000	15.1	€5,300	22.7	€7,900
F	6.8	€2,400	9.1	€3,200	13.6	€4,700	18.2	€6,300	27.2	€9,500
G	8.5	€3,000	11.3	€4,000	17	€5,900	22.7	€7,900	34	€11,900

This table gives estimated annual fuel cost and CO_2 emissions on the basis of typical occupancy and heating the entire dwelling to a comfortable level.

The Tables above are based on fuel and electricity factors from February 2014.

Figure 1: A guide to BER ratings for homeowners - SEAI

There will be many homes without a BER rating, in particular self-built homes. Some of these may be energy efficient but difficult to assign a BER rating to due to the use of natural materials such as straw bale, cob, thatch and sod roofs.

The BER does not account for intelligent architecture such as siting, site aspect, building orientation, passive heating with thermal mass and good windbreak design around the house which will reduce heating requirements.

Thirty years behind Germany

> *"3.3Micro-generation Support Scheme Policy Principles*
>
> *Micro-generation policy should be based on clear and unambiguous objectives, and should target specific sectors of society where there are proven market failures. Despite the potential of micro-generation technologies to help Ireland meet its energy and emission targets and induce positive shifts in energy consumption, the rate of adoption among homeowners remains low at approximately 1.5% of domestic electricity end-users.* ***The reasons include installation costs, low awareness of micro-generation among homeowners and homeowners' willingness to pay (WTP) falling significantly below market prices."***
>
> **- page 12 Public Consultation on a Micro-generation Support Scheme in Ireland 2021**

Surely the fact that the Irish government is 30 years behind Germany in bringing in an MSS and so here excess energy is currently given away to the grid is the main reason for low take up of microgeneration?!

Capacity Banding

> *"3.6 Capacity banding*
>
> *The key principles behind the banding of the different technologies used in the assessment were:*
>
> *-Alignment with European standard EN50549 “Requirements for generating plants to be connected in parallel with distribution networks”;*
>
> *-All connections will be behind the meter, such that any generator installed is to supply power to a specific load;*
>
> *-Optimising the micro-generation scheme to support self-consumption with at least 70% of the electricity being generated used on site.*
>
> *A 30% limit on the level of export onto the network was chosen to maximise self-consumption savings, which is the optimal arrangement for prosumers to pay back their installation costs quickly. Over its lifetime, a micro-generation installation is a means of reducing energy costs for consumers and will help to reduce Ireland’s carbon emissions. The scheme also provides limited supports to incentivise additional installed capacity of renewables where a gap in funding is not provided by the market, supporting installations across all sectors."*
>
> **- page 17 Public Consultation on a Micro-generation Support Scheme in Ireland 2021**

This is unnecessarily limiting generation capacity because:

If other ill advised thoughts are followed through on half of households may already be disqualified on BER grounds. Many apartments won't have roof space, many others won't have the best orientation/shade access etc, and others won't participate for a variety of reasons. Allow the buildings with good orientation and space install a higher capacity and recognise the value of the contribution to the grid by paying for it.

Solar in particular matches the national daily demand curve which is higher during daylight hours. A high solar generating capacity should be encouraged to stabilize the grid and displace some of the fossil gas/coal base load. Using the grid capacity as a limit makes more sense, and even then minor upgrades may be justified.

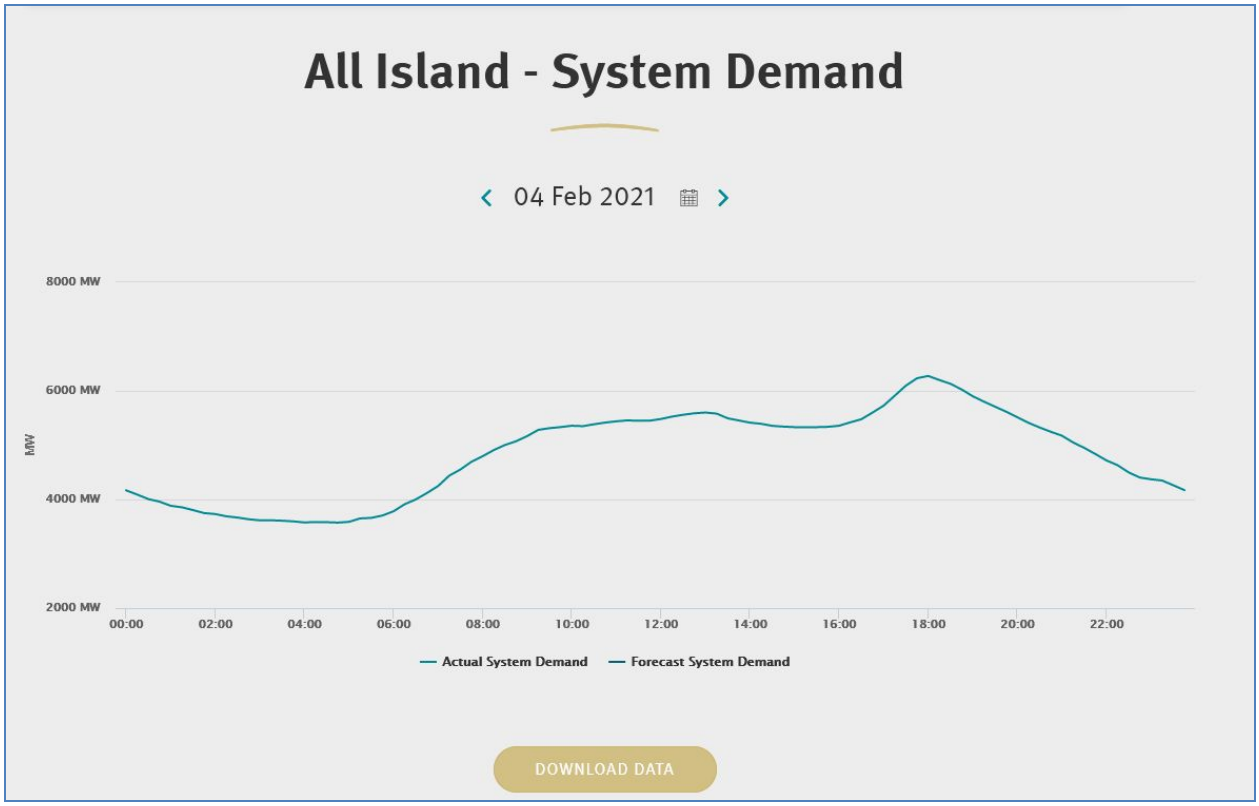


Figure 2: The daily demand curve on Feb 4th 2021 - Eirgrid

Material and installation costs won't be directly proportional to the size of the installation - allow home generators tailor their system to the site specific conditions rather than an arbitrary figure.

Is this 30% a limit on balance on instantaneous export vrs consumption? or daily, or annually?

If it is instantaneous, it is totally untenable as much of the generation (in the case of solar) will happen at a time of low household consumption during the day while people are out at school/working, or in the summer while people have less need for heating, lights or may be on holiday. In the context of locality and the Irish grid however solar generated power will be very valuable as previously discussed and shown in the Eirgrid chart above and should be recognised as such.

Choosing technology

> ***3.2.1***
>
> *The LCOE figures under the base case suggest that the large rooftop and large ground mounted solar archetypes are the most cost-efficient means of generating electricity on the microgeneration scale followed by the medium rooftop and the small and medium ground mounted solar. The small rooftop solar archetypes are the least cost-efficient among the solar technologies.*
>
> **- page 24 Ricardo Confidential Report**

Yes but they are not taking space up on the ground.

Some people will have appropriate roof space. Some will live in a mountainous area with a good hydro resource. If the payment is tied to generation then owners will be incentivized to choose technology wisely and ensure good installation.

Choosing Policy

Grants towards capital costs can introduce more bureaucracy and can encourage the inflation of hardware prices. However it would be much better to give grants for microgeneration than for the wind mega projects that also need expensive grid upgrades as already discussed. The important point would be to pay well for microgeneration - in particular during peak demand - and allow the site specific conditions to dictate what technology is installed.

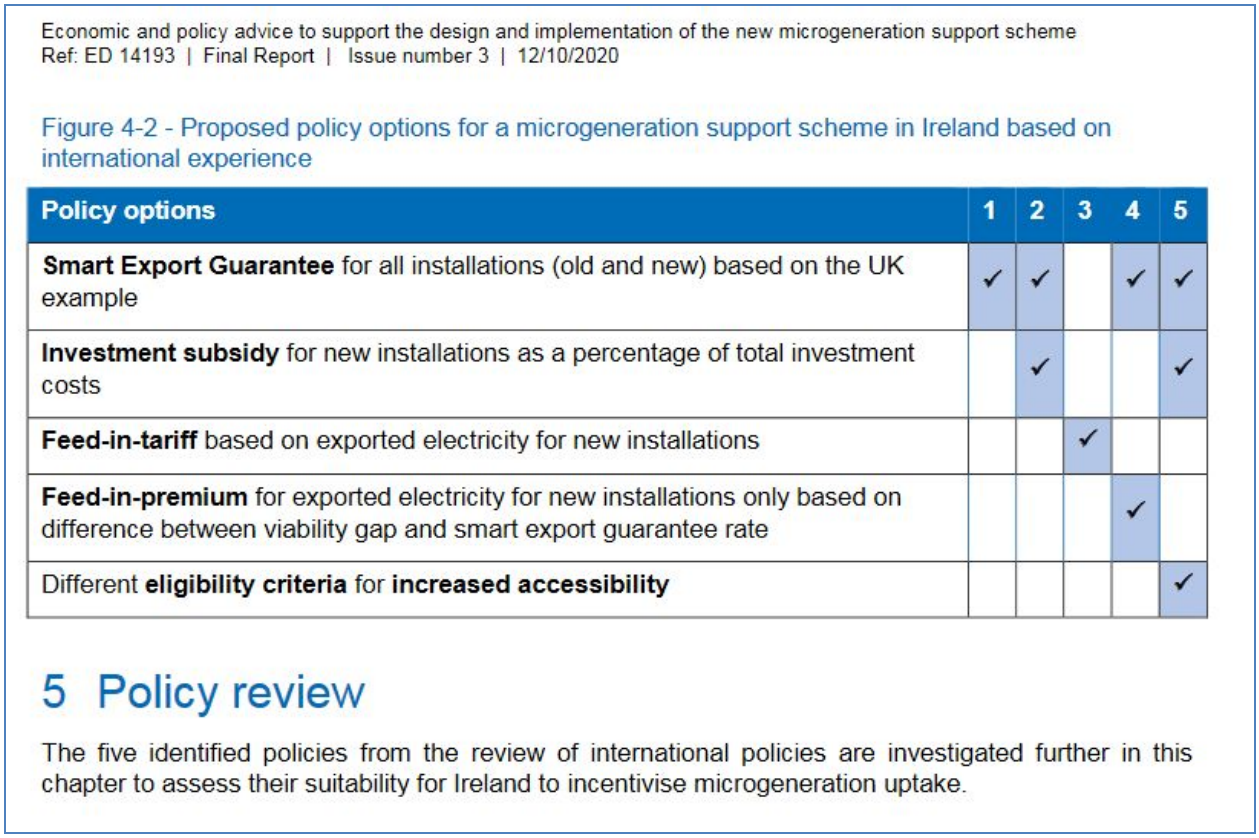
> *4.2 Feasability*
>
> *On the other hand, the UK Smart Export Guarantee received the highest score for feasibility. In this case, the scheme administrator will face some administration costs although these are expected to be significantly less than the costs of administering the FITs scheme, given the* ***light touch*** *nature of the authority's role, in line with the market based approach of a SEG. Microgeneration schemes that are based on market-type mechanisms such as the Northern Ireland example can instead pose significant barriers for*

smaller entities to make use of the offerings of the scheme as it increases the administrative burden; and increases uncertainty regarding return on investment. In addition, ***the scheme can also be costly to consumers as all costs are passed through.***

- page 24 Ricardo Confidential Report

Levying the support on the electricity bill SEG style is anti-equity. Poorer people will be less likely to have the means to invest in microgeneration and so would experience the scheme by paying more for their electricity. Similarly the rented generation would just experience it as another rip off. There is already resentment towards renewable energy projects and their owners/developers due to the PSO levy. This could become a source of resentment between neighbours if those with more capital begin to benefit from it at the expense of poorer taxpayers - source the MSS support from general taxation to avoid this problem.

Mysterious unlabeled table points to SEG. Why?



Economic and policy advice to support the design and implementation of the new microgeneration support scheme
Ref: ED 14193 | Final Report | Issue number 3 | 12/10/2020

Figure 4-2 - Proposed policy options for a microgeneration support scheme in Ireland based on international experience

Policy options	1	2	3	4	5
Smart Export Guarantee for all installations (old and new) based on the UK example	✓	✓		✓	✓
Investment subsidy for new installations as a percentage of total investment costs		✓			✓
Feed-in-tariff based on exported electricity for new installations			✓		
Feed-in-premium for exported electricity for new installations only based on difference between viability gap and smart export guarantee rate				✓	
Different **eligibility criteria** for **increased accessibility**					✓

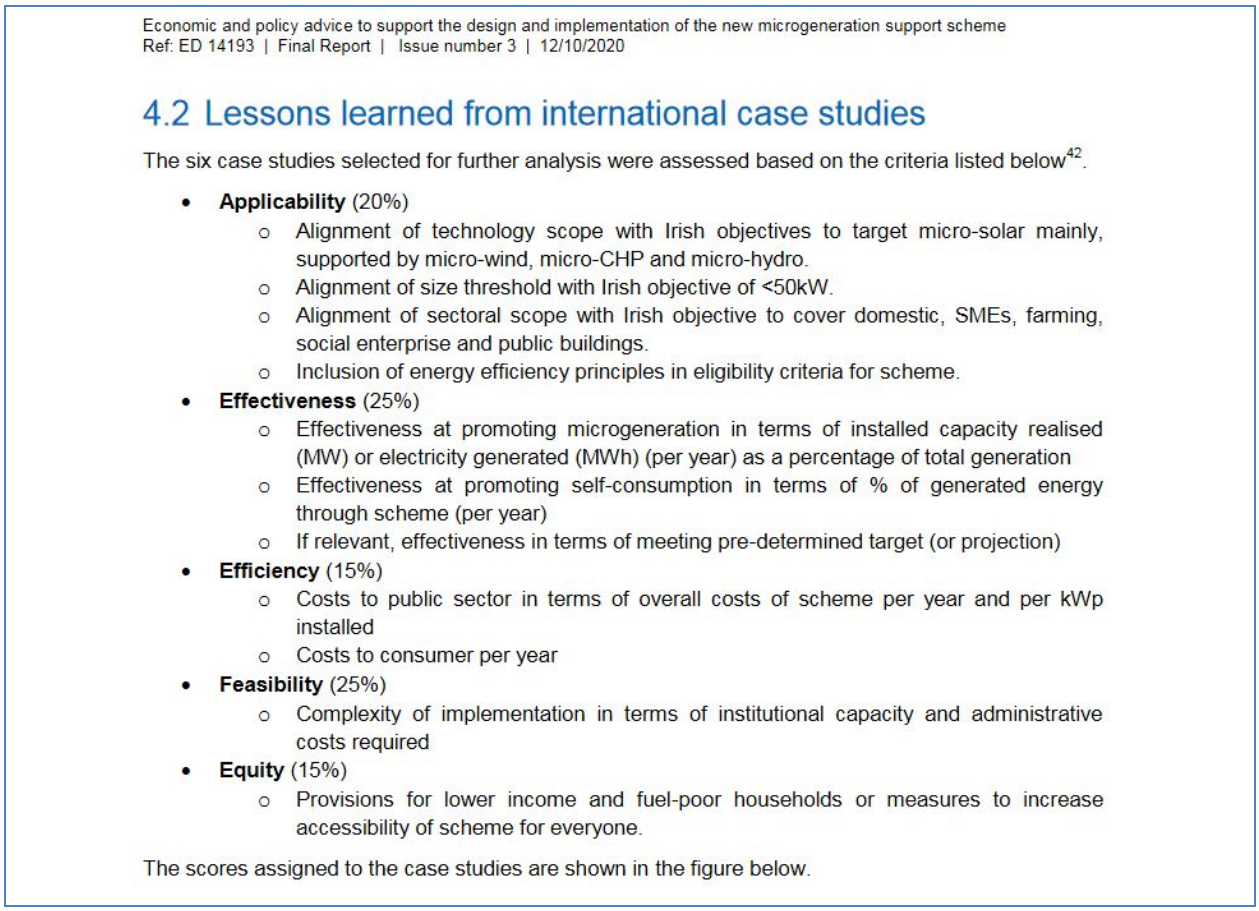
5 Policy review

The five identified policies from the review of international policies are investigated further in this chapter to assess their suitability for Ireland to incentivise microgeneration uptake.

Figure 3: Misleading chart, page 40 Ricardo Confidential

What does 1 to 5 represent in the above chart? This chart seems to be the reason for going with SEG policy option.

It seems it represents the criteria listed on page 34:



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4.2 Lessons learned from international case studies

The six case studies selected for further analysis were assessed based on the criteria listed below[42].

- **Applicability** (20%)
  - Alignment of technology scope with Irish objectives to target micro-solar mainly, supported by micro-wind, micro-CHP and micro-hydro.
  - Alignment of size threshold with Irish objective of <50kW.
  - Alignment of sectoral scope with Irish objective to cover domestic, SMEs, farming, social enterprise and public buildings.
  - Inclusion of energy efficiency principles in eligibility criteria for scheme.
- **Effectiveness** (25%)
  - Effectiveness at promoting microgeneration in terms of installed capacity realised (MW) or electricity generated (MWh) (per year) as a percentage of total generation
  - Effectiveness at promoting self-consumption in terms of % of generated energy through scheme (per year)
  - If relevant, effectiveness in terms of meeting pre-determined target (or projection)
- **Efficiency** (15%)
  - Costs to public sector in terms of overall costs of scheme per year and per kWp installed
  - Costs to consumer per year
- **Feasibility** (25%)
  - Complexity of implementation in terms of institutional capacity and administrative costs required
- **Equity** (15%)
  - Provisions for lower income and fuel-poor households or measures to increase accessibility of scheme for everyone.

The scores assigned to the case studies are shown in the figure below.

Figure 4: Selection criteria, page 34 Ricardo Confidential

This comparison between SEG and FIT in the UK is more telling:

Box 1 - UK Feed-in Tariff (FIT) and Smart Export Guarantee schemes

The FIT was intended to be a subsidy framework for small-scale low carbon technologies which could be easily understood, offered certain returns and covered a wide range of technologies.

The scheme has supported the installation of over 850,000 installations, some 6.6GW of UK generation capacity. This is equivalent to 7.8% of the UK's electricity generation capacity (or 0.9% per year).[44]

The UK FIT scheme has over-achieved its targets and has therefore been regarded as successful. However, while the FIT has been effective at encouraging microgeneration, the cost-effectiveness of the policy overall for the UK government is poor. This is because the scheme assumes that generators export 50% of the electricity they produce and are paid for it-even when the electricity is not needed by the grid or they export less than 50%.

The FIT ended on 31st March 2019 and was replaced in 2020 by the Smart Export Guarantee (SEG) with the government citing a desire to "move towards market-based solutions, cost reflective pricing and the continued drive to minimise support costs on consumers."

Under the SEG, electricity suppliers set their own tariff for exported electricity, so tariffs can be set so that net costs to suppliers are avoided. The SEG is therefore unlikely to carry any policy costs which are typically paid for by final consumers. However, the SEG is also expected to be less effective, with the impact assessment carried out in advance of its implementation predicting that it will deliver 12.5 MW per year until 2026, equivalent to 0.09% of the UK's electricity capacity (or 0.015% per year).[45]

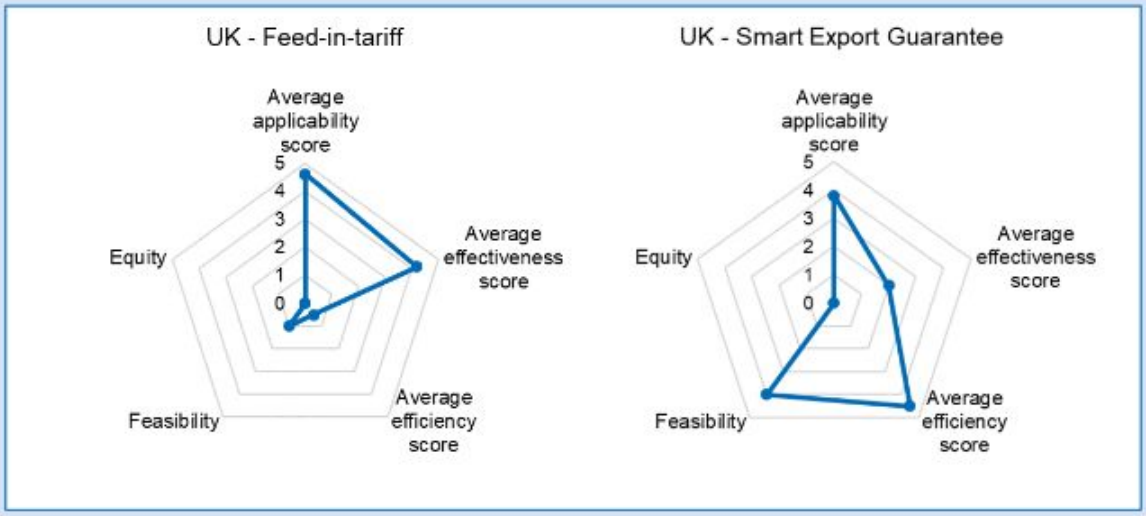

Figure 5: Page 37 Ricardo C. report

It would also be feasible, efficient and very applicable to the Irish situation to do nothing for microgeneration as has been the case for the last 30 years. Should that policy

decision be shown and also get similar high marks to SEG? Effectiveness and equity are much more important criteria. As shown in the above box, in the UK, FIT delivered 0.9% of the grid's generating capacity per year compared to a projected 0.015% under SEG. **In this Case SEG is projected to get 60 times less capacity installed each year than FIT did.**

Links

[1]https://www.irishtimes.com/opinion/diarmaid-ferriter-why-irish-local-government-is-so-useless-1.4092165

[2]https://www.independent.ie/opinion/letters/no-conflict-with-mr-halligans-job-29401164.html

[3] https://communitypower.ie/its-all-about-grid/