IRISH CO-OPERATIVE ORGANISATION SOCIETY LTD

Submission to the Public Consultation on a Micro-generation Support Scheme in Ireland 2021

The Irish Co-operative Organisation Society (ICOS) is the umbrella for the co-operative movement in Ireland.

The agri-food sector is facing enormous challenges due to low income across the main production sectors, volatile incomes in the dairy sector, the ramifications of Brexit and the need to transition towards a low carbon future.

Irish dairy farms have an average herd size of 90 cows. For a typical herd of this size, the installation of an array under 11kW makes a lot of sense. The additional cost of battery storage is not incurred and there may be opportunities to avail of TAMS grant aid under the CAP and also capital allowances, subject to the individual farm situation.

However, the energy consumption on a considerable number of dairy farms would certainly warrant an array of up to 30kW, possibly even 50kW for larger dairy farms, in the presence of feed in tariff.

In summary, three key factors make Irish dairy farms a perfect fit for farm-based solar microgeneration:

1. Significant amounts of roof space available on-farm, allowing installation of solar panels with minimal visual and environmental impact;
2. Majority of energy consumption taking place during daylight hours in the summer months;
3. considerable potential to aid Ireland reaching its renewable energy targets and mitigate carbon emissions on farm while offering cost savings and a stable return on investment for farmers as set out in the tables in Appendix 2.

In addition, it should be noted that many beef and tillage farms would also have significant potential in this area if the 30% export limit were raised.

With this in mind, ICOS welcomes the Government's proposed Micro-generation Support Scheme and notes that alongside the challenges set out above, a well-structured farm-based microgeneration offers a genuine win-win situation for Irish farmers, the environment and Ireland's energy needs. To deliver on this potential, we believe the proposed Scheme requires a few minor changes and additional supports which we have set out in this document.

Supports

Medium to large-sized solar panel installations and renewable energy technologies in general are currently quite expensive and out of reach for the average farmer, who is earning 40% of the average industrial wage in Ireland. Therefore, there is a low level of investment in solar energy on farm level at the moment. Those farmers who have invested did so when able to subsidise the cost of installation with the CAP TAMS II grant and use of capital allowances. While these supports are welcome, there are significant calls on individual farmers' capital allowances and CAP funding. In addition, solar arrays that are greater than 11kW output are not covered by TAMS II supports. Therefore, to open up the opportunity to all farmers without needing to compromise on other necessary on-farm investments,

an additional specific renewable energy infrastructure grant scheme for agricultural holdings should be set up to promote farm-based solar generation. Funding for this would ideally come from the Just Transition Fund or National Recovery Fund which prioritises investment in renewable energy.

Capacity Bands

While we believe that the definition and upper limit of 50kW is appropriate for microgeneration, we note that within the finalised capacity bands set out in the consultation document agriculture is categorised in the 0-11kW capacity bands for each technology. The consultation document refers to the specific energy requirements of dairy farms and with these requirements in mind we do not think it is appropriate to restrict farmers from deploying larger installations, if the individual farm's energy consumption gives a basis for such an installation.

As set out we acknowledge that getting a larger amount of capacity from farms to the national grid will present infrastructural challenges. However, the potential benefits offered by a network of power generators dispersed throughout rural Ireland would provide energy security and a boost to the rural economy.

There is also a potential opportunity in an agricultural and industrial context to consider installations between 50 kW and 500 kW in size (below RESS threshold).

The co-operative sector and its member farmers are ready and willing to engage and assist with such an initiative if required.

BER Rating Requirement

We believe requiring occupied buildings to achieve a minimum post-works BER C rating is appropriate for installations in solely residential settings and this condition of the Scheme should be tweaked to only apply to residential installations and not agricultural or SME connections that may have an adjacent residential building that makes up a minimal portion of that farm/SME's total energy consumption. Requiring such an upgrade in this setting may add significant cost to some projects while not leading to significant overall energy savings.

Community Energy Generation

We note that co-operatives are autonomous, democratic, member-led organisations rooted in their communities around Ireland which satisfy the criteria of a Renewable Energy Community. Their long track records of sustainably providing goods and services to their members and their local communities in several competitive, technically sophisticated sectors makes Irish co-operatives an ideal delivery vehicle for all types of community energy generation projects and we are keen to engage with the DECC and the SEAI on how we can be of assistance in this area. For example, a number of dairy purchasing co-operatives and co-operative livestock marts are strategically located in or in close proximity to a number of rural towns throughout the country and would therefore be well placed to meet the energy needs of their locality while reducing their own operating costs. However, we note that it is critical that the national grid is upgraded to facilitate such projects.

Planning

ICOS welcomes the news that the SEAI and Department of Housing, Planning and Local Government are working with the Department of Climate Action and the Irish Aviation Authority on the

amendment of restrictions on rooftop solar panels in commercial settings which are currently set at 50m^2 or 50% of roof area. By removing these planning barriers for mid-sized installation there is a greater opportunity for farm level power generation.

Appendix 1:

ICOS' responses to the questions from the consultation document:

Q1. Do you agree with the approach to introduce the Clean Export Guarantee in order to provide an export payment that reflects the fair market value of the electricity in compliance with the recast Renewable Energy Directive? If not, what alternative model would you propose and why?

We agree with this option as it gives the generator a stable, fair market price for electricity without placing undue expense on consumers.

Q2. Do you agree that initially the Clean Export Guarantee (CEG) should be a fixed, minimum tariff provided by Suppliers as a pass-through cost based on the annual average Day Ahead Market (DAM) wholesale electricity price? If not, what alternative model would you propose and why?

Yes. As mentioned above, it is critical that this scheme provides a stable, fairly priced income for the generator without placing undue cost on the generator. Basing the CEG on the day ahead market strikes this balance. We request that the process for determining CEG tariffs be governed appropriately, allowing for transparency and oversight in how the CEG tariff is set.

Q3. A common 3.75% discount rate across all sectors assessed was chosen as an input to the viability gap assessment. Do the respondents agree with this approach? If not, what alternative would you propose and why?

This approach appears reasonable to optimise the accuracy and relevance of the research in relation to the viability gap.

Q4. The emerging policy includes a measure whereby all Renewables Self-Consumers who install micro-generation technology after 30th June 2020 can access a payment of a fixed, minimum Clean Export Premium tariff for exported electricity determined by the lowest cost technology for each sector. Do the respondents agree with this approach? If not, what alternative model would you propose and why?

Yes. As mentioned above, it is critical that this scheme provides a stable, fairly priced income for the generator without placing undue cost on the consumer.

Q5. The proposed Clean Export Premium tariff for exported electricity will be offered for a maximum duration of 15 years for all technologies. Do the respondents agree with this approach? If not, what alternative model would you propose and why?

Given that the Premium will be funded by the PSO Levy, we agree with the need for a maximum duration on the Premium to account for energy supply becoming cheaper as time progresses.

Q6. The high-level design includes a measure whereby a Clean Export Premium tariff for exported electricity will be capped by exported volume related to the installation size in order to prevent over-remuneration. Do the respondents agree with this approach? If not, what alternative model would you propose and why?

As mentioned above, a cap on the Clean Export Premium is critical to prevent overcompensation and ensure energy prices are not increased excessively because of this scheme, while allowing generators to instal generators that are appropriate to their needs. The primary benefit of this scheme will be the

decarbonisation of domestic and SME energy generation, rather than maximising returns for generators, and this measure reflects that.

Q7. The high level design proposed 4 eligible renewable technologies (micro-solar, wind, hydro, CHP). Do the respondents agree with this proposal? If not, what alternative would you propose and why?

We agree with the choice of these 4 technologies as they are only practical and viable options for microgenerators in Ireland. It is worth noting that the technologically neutral orientation of the scheme will naturally favour micro-solar due to lower costs associated with the technology.

Q8. There is a range of renewable technology that can be deployed in domestic and SME premises and can facilitate high levels of renewable electricity self consumption. The definition of micro-generation is therefore proposed to be "microgeneration technologies including micro-solar PV, micro-hydro, micro-wind and micro-renewable CHP with a maximum electrical output of 50kW". Do the respondents agree with this proposal? If not, what alternative would you propose and why?

We believe that the definition and upper limit of 50kW is appropriate. However, within the finalised capacity bands set out in the consultation document, we note that agriculture is categorised in the 0-11kW capacity bands for each technology. We note the consultation document refers to the specific energy requirements of dairy farms and with these requirements in mind we do not think it is appropriate to restrict farmers from deploying larger installations if their individual farm's energy consumption gives a basis for such an installation.

Irish dairy farms have an average herd size of 90 cows. Teagasc research carried out in 2018 on energy consumption on Ireland's dairy farms indicates that a farm with a herd of 118 cows would consume 42.34 Watt/hours per litre of milk produced. This equates to approximately 72kW/hrs per day and 26,000kW/hrs per year; a level of energy consumption on a slightly above average sized farm that would certainly warrant an array of up to 30kW and possibly even 50kW for larger dairy farms.

In addition, the significant amounts of roof space available on these farms and most of the energy consumption taking place during daylight hours in the summer months means that there is significant potential offered by micro-solar to decarbonise these farms while giving a return to the farmer.

We acknowledge that getting a larger amount of capacity from farms to the national grid will present infrastructural challenges. However, the potential benefits offered by a network of power generators dispersed throughout rural Ireland would provide additional benefit. The co-operative sector and its member farmers are ready and willing to engage and assist with such an initiative if required.

Q9. Applicants will be required to have an export connection from the Distribution System Operator. Do the respondents agree with this approach? If not, what alternative model would you propose and why?

This requirement is appropriate in order to ensure the national grid can cope with the additional supply coming from microgeneration.

Q10. The CEP will be available to existing buildings only. Do the respondents agree with this approach? If not, what alternative model would you propose and why?

We are of the view that CEP should also be available to new buildings on existing agricultural and SME premises, provided those buildings are being erected for the core enterprise of that premises.

Q11. Occupied buildings will need to achieve a minimum post-works BER C rating. Do the respondents agree with this approach? If not, what alternative model would you propose and why?

We believe that this requirement is appropriate for installations on residential buildings. However, it should be tweaked to only apply to residential installations and not agricultural or SME connections that may have an adjacent residential building that makes up a minimal portion of that farm/SME's total energy consumption. Requiring such an upgrade in this setting, such as an older farmhouse, may add significant cost to the project while not leading to significant overall energy savings.

Q12. The minimum BER rating for the MSS will be increased over time to align with other Government energy efficiency retrofit programmes. Do the respondents agree with this approach? If not, what alternative model would you propose and why?

Yes

Q13. Community groups must conform to the definition of a Renewable Energy Community and be registered with SEAI. Do the respondents agree with this approach? If not, what alternative model would you propose and why?

We support the inclusion of Renewable Energy Communities in microgeneration. Some community groups may find difficulty in handling large energy generation projects, such as those covered by the Renewable Energy Support Scheme and microgeneration could offer a gateway or a steppingstone towards eventual involvement in bigger generation projects, allowing them to gain knowledge and experience.

We also note that existing co-operatives are autonomous, democratic, member-led organisations rooted in their communities around Ireland which satisfy the criteria of a Renewable Energy Community. Their long track records of sustainably providing goods and services to their members and their local communities in several competitive, technically sophisticated sectors makes Irish co-operatives an ideal delivery vehicle for all types of community energy generation projects and we are keen to engage with the DECC and the SEAI on how we can be of assistance in this area.

Q14. The emerging policy proposes that Suppliers recover the costs of the Premium support through the PSO. DECC welcome the respondents' views on the funding mechanism supporting micro-generation. Do you think the PSO should support microgeneration or should this be through Suppliers retail rates or other mechanism?

We believe that the aims of the Microgeneration Support Scheme are in line with the type of initiative that should be funded by the PSO.

Appendix 2: Commercial rationale for farm-based rooftop solar photovoltaic arrays

Example A: 90 Cow herd

Herd size	90
Milk Yield (L)	477,000

	Electricity Consumed per L Milk produced (Wh/L)	Electricity Consumed (KWh/yr)	Cost of electricity (c/L)	€/Year	Potential Savings
Milk Cooling	13.02	6,211	0.16	€763	€254
Water Heating	9.83	4,689	0.11	€525	€175
Milking	8.44	4,026	0.11	€525	€175
Lighting	1.37	653	0.02	€95	€32
Other	7.54	3,597	0.10	€477	€159
Pumping	2.13	1,016	0.03	€143	€48
Total	**42.33**	**20,191**	**0.53**	**€2,528**	**€843**

	PVA Size (KW)	Estimated Annual Output (KW/h)	Daily Output (KW/h)	70% Consumed on-Farm (KW/h)	30% Exported (KW/h)	Annual Income **@8c/kWh**	Cost of Installation **@€1300 per KW**	ROI @8c/kWh (yrs)	
*	3	2,600	7	4.99	2.14	€208	€3,900	3.7	*
*	6	5,200	14	9.97	4.27	€416	€7,800	6.2	*
*	11	9,533	26	18.28	7.84	€763	€14,300	8.9	*

*TAMS Grant available for installations of this size has not been factored in.

Conclusions (90 cow dairy herd, installing a 6kW array):

- The installation of a 6kW array on a typical 90 cow dairy farm will save the farmer €843 per annum in energy savings.
- The farmer will receive an annual income of €416 from exported energy at 8c/kWh.
- The cost of installing a 6kW array is €7,800 with a return on investment at 6.2 years.
- The return on investment period may be reduced through TAMS grant aid and Capital Allowances.
- No costs related to battery storage.

Example B: 120 Cow herd

Herd size	120
Milk Yield (L)	636,000

	Electricity Consumed per L Milk produced (Wh/L)	Electricity Consumed (KWh/yr)	Cost of electricity (c/L)	€/Year	Potential Savings
Milk Cooling	13.02	8,281	0.16	€1,018	€339
Water Heating	9.83	6,252	0.11	€700	€233
Milking	8.44	5,368	0.11	€700	€233
Lighting	1.37	871	0.02	€127	€42
Other	7.54	4,795	0.10	€636	€212
Pumping	2.13	1,355	0.03	€191	€64
Total	**42.33**	**26,922**	**0.53**	**€3,371**	**€1,124**

	PVA Size (KW)	Estimated Annual Output (KW/h)	Daily Output (KW/h)	70% Consumed on-Farm (KW/h)	30% Exported (KW/h)	Annual Income **@8c/kWh**	Cost of Installation **@€1300 per KW**	ROI @8c/kWh (yrs)	
*	3	2,600	7	4.99	2.14	€208	€3,900	2.9	*
*	6	5,200	14	9.97	4.27	€416	€7,800	5.1	*
*	11	9,533	26	18.28	7.84	€763	€14,300	7.6	*
	15	13,000	36	24.93	10.68	€1,040	€19,500	9.0	
	20	17,333	47	33.24	14.25	€1,387	€26,000	10.4	
	30	26,000	71	49.86	21.37	€2,080	€39,000	12.2	
	40	34,667	95	66.48	28.49	€2,773	€52,000	13.3	

*TAMS Grant available for installations of this size has not been factored in.

Conclusions (120 cow dairy herd, installing a 11kW array):

- The installation of an 11kW array on a typical 120 cow dairy farm will save the farmer €1,124 per annum in energy savings.
- The farmer will receive an annual income of €763 from exported energy at 8c/kWh.
- The cost of installing an 11kW array is €14,300 with a return on investment at 7.6 years.
- The return on investment period may be reduced through TAMS grant aid and Capital Allowances.
- No costs related to battery storage.

Example C: 250 Cow herd

Herd size	250
Milk Yield (L)	1,325,000

	Electricity Consumed per L Milk produced (Wh/L)	Electricity Consumed (KWh/yr)	Cost of electricity (c/L)	€/Year	Potential Savings
Milk Cooling	13.02	17,252	0.16	€2,120	€707
Water Heating	9.83	13,025	0.11	€1,458	€486
Milking	8.44	11,183	0.11	€1,458	€486
Lighting	1.37	1,815	0.02	€265	€88
Other	7.54	9,991	0.10	€1,325	€442
Pumping	2.13	2,822	0.03	€398	€133
Total	**42.33**	**56,087**	**0.53**	**€7,023**	**€2,341**

	PVA Size (KW)	Estimated Annual Output (KW/h)	Daily Output (KW/h)	70% Consumed on-Farm (KW/h)	30% Exported (KW/h)	Annual Income **@8c/kWh**	Cost of Installation **@€1300 per KW**	ROI @8c/kWh (yrs)	
*	3	2,600	7	4.99	2.14	€208	€3,900	1.5	*
*	6	5,200	14	9.97	4.27	€416	€7,800	2.8	*
*	11	9,533	26	18.28	7.84	€763	€14,300	4.6	*
	15	13,000	36	24.93	10.68	€1,040	€19,500	5.8	
	20	17,333	47	33.24	14.25	€1,387	€26,000	7.0	
	30	26,000	71	49.86	21.37	€2,080	€39,000	8.8	
	40	34,667	95	66.48	28.49	€2,773	€52,000	10.2	

*TAMS Grant available for installations of this size has not been factored in.

Conclusions (250 cow dairy herd, installing a 15kW array):

- The installation of an 15kW array on a typical 120 cow dairy farm will save the farmer €2,341 per annum in energy savings.
- The farmer will receive an annual income of €1,040 from exported energy at 8c/kWh.
- The cost of installing an 15kW array is €19,500 with a return on investment at 5.8 years.
- An array of this size is **not eligible for TAMS** grant aid but the return on investment period may be reduced through Capital Allowances.
- No costs related to battery storage.