Solid Fuels Regulation Consultation

Submission by Colin Doyle

Summary

I believe that extending the existing smokeless fuel regulations nationwide, or introducing additional regulations, would pose risks for national climate policy and have negligible impact on air quality in rural areas and in small towns.

National climate policy will require solid fossil fuels to be greatly reduced in any event, and this will automatically result in substantially lower emissions. Achieving a reduction in coal and peat use will require a carefully devised strategy, based on education, encouragement, incentives and increasing carbon taxes. Extending the smokeless zones, or introduction of additional solid fuel regulations would most likely provoke a negative reaction from the population and would be viewed as "an attack on rural Ireland", which would undermine national climate policy objectives.

There is also a risk that a sudden introduction of regulations and the negative publicity surrounding solid fuels would encourage environmentally conscious citizen to change to oil or gas which would not be a desirable policy outcome. Special consideration must be given to disadvantaged households. A targeted set of supports aimed at reducing coal and peat burning in open fires in these households, and shifting to high efficiency wood stoves, would yield immediate air quality benefits.

There may be a case for national standards for wood fuel, which should include sustainability and wood quality aspects. This should be a voluntary standard which would be of assistance in the marketing of good quality firewood.

Policy Risks

Ireland is just embarking on a very ambitious GHG reduction plan to achieve 51% reduction in GHG by 2030. A great deal will be asked of the public in terms of escalating carbon taxes, regulations, and pressures on agriculture. There is likely to be a strong reaction in rural areas against some of these measures, which may rupture whatever political consensus that exists. There is a great risk that additional unnecessary fuel regulations for small towns and rural areas will increase the sense of persecution of rural communities and contribute to breakdown in public acceptance of climate policy. Such an outcome would be regrettable and completely avoidable.

Consider also what outcomes we hope to achieve from an extension of the solid fuel regulations. Do we actually want householders to switch to smokeless fossil fuels which could be termed a "clean coal" and "clean peat" policy? If so, this would simply prolong the burning of solid fossil fuels. Or is the objective to give a nudge to householders to give up on solid fossil fuels altogether. If this is the case, and if people look to alternatives, it would most likely be oil-fired central heating in rural areas, as the cost of heat pumps would be prohibitive for most. In larger towns already zoned smokeless,

the arguments against solid fuels may also persuade environmentally conscious householders to install gas, another "clean fossil fuel". This is not just in the realm of speculation, as Gas Networks Ireland has the stated intention to connect 300,000 existing houses to the gas grid (GNI. Network Development Plan 2019). Were introduction of new regulations to prompt a sudden switch to oil and gas, this would be a perverse policy outcome, as all fossil fuels must be phased out over the coming decades.

GHG Policy will Achieve Reduction in Air Pollution

Peat and coal have the highest GHG emission factors of all fossil fuels, and these will have to be targeted in whatever strategies are adopted to achieve the 2030 reduction target. If we can achieve a 51% reduction in these fuels for domestic heating by 2030, particulate emissions from these sources would also decrease by 51%. Use of these polluting solid fossil fuels is already steadily decreasing, and we can build on this momentum. Between 2010 and 2018 domestic solid fuel consumption declined by 29% (CSO Table SE106).

As peat and coal are phased out using carbon tax measures, the better off households will have the immediate option of paying the additional tax, or shifting the heat load to their oil or gas systems, and in the longer term undertaking thermal upgrades and moving to heat pumps or renewable electricity.

For disadvantaged households options are more restricted. Upgrading these houses stock to NZEB or passive standard may of course be the ultimate objective but will realistically take many decades and will be very costly. Based on CSO data (Table HS 248) about 5% of households have no central heating, and may therefore have to rely totally on solid fuel fires. Also, of the 95% of households which have central heating, many may choose to heat just one family room in the evening using solid fuel as an economy measure. For these households, incentives to encourage a shift to renewable wood and highly efficient stoves offers a relatively low cost option, and could achieve immediate reductions in pollutant emissions.

Evidence from Air Quality Monitoring

In terms of $PM_{2.5}$, Ireland's air quality is very comfortably within current EU standards. Regarding compliance with the stricter WHO AQG (10 µg/m^3 annual mean), the European Environment Agency states:

> *"Estonia, Finland, Iceland, Ireland, Luxembourg, Norway and Sweden did not report any UTD concentrations above the WHO AQG for PM2.5."*
>
> (EEA. Air Quality in Europe – 2020 Report, page 54, also data in Figure ES.1, page 8 and Figure 4.3, page 43 shows Ireland below WHO AQG)

The most recent EPA report (Air quality in Ireland, 2019) however states that the WHO AQGs were exceeded at a number of locations. It is not clear how these statements can be reconciled, but it may be related to reference locations used for the National Exposure Reduction Target (NERT), or perhaps consideration of the WHO 24-hour concentration guideline. The EPA report did not include measured data, however this data was provided upon request, and is reproduced in the table at the

end of this submission. The smoke zone designations for the monitoring locations are also indicated in the table (green: smokeless zones, black: not smokeless).

The average of the smokeless locations in 2019 was 10.3 µg/m^3, and the average for the non-smokeless locations was 10.2 µg/m^3, a negligible difference. Of the 21 locations in smokeless zones 10 locations were greater than or equal to the 10 µg/m^3 guideline, and 11 within the guideline. Of the 7 non-smokeless locations, 3 exceeded the guideline, 4 were within the guideline. Overall there is no evidence of a $PM_{2.5}$ benefit for smokeless areas. Further evidence of lack of correlation between smoke zoning and $PM_{2.5}$ can be seen in the data for individual towns.

The town of Longford was previously cited by the EPA as an example of a small town where solid fuel burning caused exceedance of air quality guidelines for $PM_{2.5}$ (Air Quality in Ireland, 2018). It was stated to be worse than Bray where there was a ban on bituminous fuel, and which was connected to the gas network. Longford was still not designated a smokeless zone in 2019, yet the measured annual mean was 9 µg/m^3 (just 2 µg/m^3 greater than in Bray), and within the WHO guideline. Figure 8 in the 2019 report illustrates how particulate levels increase in the evening when fires are lit. It shows data for Letterkenny (smokeless) and Enniscorthy (not smokeless until 2020). There is no significant difference in $PM_{2.5}$.

The town of Ennis has been monitored over many years. The smokeless fuel zoning was introduced in 2013. The $PM_{2.5}$ concentration averaged over the four years prior to the smokeless zoning was 13 µg/m^3 (range 10 to 16). After six years of smokeless zoning there is no evidence of a change. The result for 2019 was 14 µg/m^3.

It could reasonably be concluded from the monitoring data that there is no evidence that a ban on bituminous coal would result in a detectible change in $PM_{2.5}$. The overall atmospheric burden of particulate matter would appear to be generated by the so-called smokeless fuels: peat briquettes, smokeless coal, and wood (sod peat is not a common fuel in towns).

This view is supported by findings of the Sapphire report on source determination, which found that peat, wood and coal all contributed to particulate pollution, and stated:

> *"Future efforts to improve air quality in these towns, and other similar towns, will need to address how domestic residences are heated in general, rather than attempting to discourage the use of one specific solid fuel."*
>
> (EPA Research Report no 113, page ix)

Standards for Wood Fuels

Fuel merchants in towns throughout Ireland already have good quality wood fuel for sale either kiln-dried or air dried. Very low moisture wood briquettes are also widely available in fuel merchants, shops, and petrol stations.

In terms of the need for quality standards, there is quite a difference between coal products and timber products. For manufactured anthracite ovoids a customer could not tell from inspection what the energy and pollution characteristics are. Hence these products have been subject to regulation over many years. In contrast, poorly dried timber is easy to detect and customers can be trusted to preferentially buy dry timber, which is widely available from fuel merchants. There is no incentive or saving in buying poorly dried timber. It is questionable whether any formal regulation is needed for wood fuels, but voluntary technical standards may be beneficial for marketing purposes. The standards could be quite basic, and could include certification of renewable origin, statement of moisture content, and energy yield per kg.

In rural areas logs are also widely available from small suppliers. Farmers may also cut their own wood for their own use. These logs need to be dried for about a year before use. Customers who regularly burn such firewood are well aware of the benefit of dry timber and either source this pre-dried from suppliers, or store under cover until suitably dried. Given the very low housing density in rural areas combustion particulate pollution is negligible. Formal regulation of wood quality in these areas would be disproportionate, and practically impossible to enforce. At most a public education campaign would be sufficient.

Colin Doyle is an independent climate change policy analyst. The views in this submission are his own and do not seek to represent the views of other persons or organisations.

Conflicts of interest: none

Qualifications: BA(mod) Physics, M.Sc. Physics, Pg.Dip (Env), Ph.D.

Data Source: EPA Table A12 Summary statistics for daily PM2.5 concentrations in Zones D and C in Ireland in 2019

µg/m³					
Smokeless Areas	**Annual Mean**	Median	% data capture	Days > WHO 24hr AQ Guideline	Daily Max
Ballyfermot	10	7	99	24	66
Rathmines	8	5	82	21	68
Phoenix Park	8	5	100	15	58
Finglas	9	6	100	13	59
Davutt Road	11	7	91	23	68
Marino	9	7	99	20	66
St. Johns Road	9	6	98	15	60
St. Annes Park	8	5	100	14	61
Ringsend	10	7	98	21	73
Dun Laoghaire	10	8	16	1	32
Heatherton Park	8	6	95	12	43
UCC Distillery Fields	8	5	94	13	46
Bray	7	5	79	5	75
Ennis	14	10	84	30	90
Carlow Town	8	6	100	12	39
Waterford Brownes Road	11	7	98	28	148
Letterkenny	13	8	56	24	117
Limerick People's Park	9	7	42	5	61
Athlone	14	14	7	1	41
Tralee	23	18	5	7	54
Navan	11	10	16	2	29
Average Smokeless	**10.4**				
Not Smokeless					
Tipperary Town	6	4	58	4	51
Longford	9	6	85	16	56
Enniscorthy	14	10	100	50	77
Macroom	15	12	29	16	51
Cobh	8	7	100	12	40
Claremorris	4	4	48	0	16
Roscommon Town	9	7	100	10	47
Average Not Smokeless Areas	**10.2**	excluding Claremorris which is a background reference			