**Coveney Questionnaire**

1. **Introduction:**

We call ourselves Farmgas Community Partners, and we like to claim that our mission statement is contained in the title – so, the first element is straightforward; optimum development of the biogas resources represented by the country’s farming industry - but, significantly, without prejudice to the activities of the vital dairy and livestock sectors.

However, that Community Partners element is less clear-cut - perhaps even a little perplexing. But, this serves an important purpose too – it serves as a constant reminder to us that there are many parties to an agreement and, especially where renewable energy projects are concerned, not all of them are properly served. We contend that a contract ought not to be a simple bilateral agreement between landowner and developer.

We maintain that the entire Community plays host to a Renewable Energy facility, and that a properly designed model must include a dividend, or reward for all parties in the contiguous zone. In our case, we set out to enhance quality of life aspects of the Community in as many ways as we can. Towards this end, we place a particular premium on sustainable employment - and everything that descends from this.

Farmgas Community Partners was started in 2011 by Donal Flynn; formerly Business Development Director of Project Management Ltd, and Richard Keenan – founder of Keenan – the world’s largest manufacturer of cattle feeding systems.

In the meantime our group of director-shareholders has grown to include Terry Nolan; who lately retired as MD of Shell Ireland, and Kieran Dunne; the current MD of Fuels Direct Ltd.

And, last year, Larry Murphy joined the company on his retirement as COO of NEXEN – the largest private corporation in the Canadian oil and gas production sector. While most recently, 2013 EY entrepreneur of the year; Patrick Joy - Chairman and founder of Suretank, joined the group as a director and shareholder.

Our primary influences are the CEDRA report, the Teagasc vision document: “Towards 2030”, and all facets of the exhaustive exploration of bovine biomethane carried out by UCC’s JD Murphy.

We are engineers – senior figures from a background in gas and oil production, agriculture, process engineering, manufacturing and business. But, because of this, we know that surprising, and immense, benefits can flow from the formation of the composite. Just think concrete – much more than the sum of its parts.

And, as citizens, and patriots with a small “p” we believe that we are empowered, and obliged to comment on matters of societal development

**2.0 Preamble:**

“Milestones for Success”**,** issued to assist completion of the Food Harvest 2020 progress report survey, is quite a rare and remarkable document. Honest and pragmatic, it delivers a fair-minded assessment of the present state of Ireland’s Agriculture and the Agri-Food sector.

Not given to self-congratulatory sentiment, even where undeniable success would justify its expression, it doesn’t seek to hide or explain away perceived lack of success in certain of the FH 2020 goals – such as the shortfall in employment targets.

Its candid attitude inspires esteem and admiration as, relentless in its pursuit of integri ty, it justly attributes much of the positive outcome to the international escalation in commodity prices. As a result, it promotes a willingness to cooperate in the most complete way. Such a frank approach is novel and refreshing.

As a consequence, it also motivates credibility in the more visionary aspects of the plan – because the document is more than a banal commodity report. Integration is the keyword, and it powerfully demonstrates the notion of holistic macro-system matrix that includes climate change, rural life, farming activities, safe food production, and much more - all functioning in an interconnected pattern – a rich weave, whose warp and weft renders the structure so much stronger than a simple tensile or compressive member.

We are particularly pleased to see that social sustainability will feature as a highlight in the rural weave. And, we are delighted at the news of the appointment of a Minister for State, with responsibility for the implementation of CEDRA recommendations. It shows that the excellent work of the Commission will not be permitted to languish.

The “Milestones” requirements are comprehensive, and we will not presume to pronounce on the complete set with any great authority. But, from our extensive professional experience, we believe we are adequately qualified to contribute effectively on many aspects of the documents bidding – such as engineering.

But, we want Farmgas to go beyond engineering. Just as FH 2020 seeks create a complex weave of commodity and value-added farming, sustained by an empathic approach to community, climate and the environment; we aim to transform functional engineering into a composite - a social, economical and environmental initiative. To achieve this, we need a “binder”, and that’s where local people come in – our design includes a dividend for the Community.

As, stated earlier, that’s why we call ourselves “Community Partners” – we put jobs right at the top of our design specification. Our first objective is sustainable high-end jobs to build self-worth and enrich lives in the rural community.

**3.0 The Vision: the Farmgas Integrated Food Energy Campus:**

**3.1 Integrated Farming and Energy:**

Farmgas Community Partners propose an *integrated* form of Bioenergy Campus; an alternative to the simple modality. Farmgas objectives extend beyond the simple integration of primary engineering processes. We believe that, by carrying the theme of integration beyond functional engineering activities, we can transform rural life by introducing an integrated social, economical and environmental initiative to bring sustainable high-end jobs in the hosting community – the ambition set out in the CEDRA report.

The Farmgas Campus version differs in that it is an integrated Food and Energy Campus – rather than, purely, a bioenergy campus. And, we have emerged with a holistic multi-faceted initiative that knits together waste management – both rural and urban; sustainable farming and value added food production, rural employment and micro-enterprise, stranded renewable energy resource development, climate change, GHG emissions from transport and the national herd, full spectrum renewable transport fuel.

The Farmgas Campus can best be reckoned to be like the seeding of LEADER enterprises in selected loci. And there are obvious benefits to the considered co-location of start-up rural enterprises in designated sites rather than the broadcast and randomly occurring distribution that happens at present. For example, such enterprises could include horticultural, dairy, or the burgeoning micro-brewing and distilling sectors, alongside more unfamiliar pursuits such as “green” biorefining.

The chief benefits that the Campus location offers the micro-enterprise cluster are: availability of affordable energy; the ability to transmute by-product to useful resource; the facility to produce value-added product, a beneficial use for much of the site’s process by-product, and ready access to a pool of skilled high-tech support.

The idea of Campus is best represented, in the urban setting, by the Business Park, or Shopping Mall, with the individual elements, or Campus units, entirely dependent on the ingenuity, ambition, talents and energy of each entrepreneur.

**3.2 Integration of Bovine Biomethane with Transport Sector:**

But the concept of integration, along with its co-benefits, can be carried still further. Farmgas has cast a sceptical eye over ubiquitous waste-to-energy policies so uncritically accepted in these islands, and have identified the key task as one of environmental protection and climate change.

And, because Agriculture at 30.5%, and Transport at 18.9% line up at 1 and 3 in the national GHG emissions rankings, the integration of stored slurry biomethane and transport fuel creates a sublime symbiosis by mitigating the ills of both sectors.

Slurry biomethane is truly an elite fuel and, especially in the light of Food Harvest 2020 ambitions, it provides a spectacular solution to sustainability and national environmental concerns. An increase in milk and dairy production of 50% and 40% respectively does not come about without consequences for climate change.

At 13 m3/tonne of slurry, that’s a lot of renewable bovine biomethane going to good use instead of escaping to atmosphere. It is worth noting that anaerobic digestion of cattle slurry in Denmark and Germany is at levels of 20% to 25% of total stored slurry, and a rate of some 50% is the goal. This begs the question – why not here?

An awareness of the “elite” aspect of bovine biomethane may be gained from well-to-tank studies which demonstrated savings of some 150 gCO2eq/MJ for liquid slurry as against a typical 40 gCO2eq for OFMSW. Truly, all biomethane is not equal!

These scores highlight Ireland’s potential to create a global paragon for future sustainability in the livestock and dairy sectors – but only if bovine biomethane production is integrated with food transport and distribution. Electricity generation is inappropriate in the context of dairy and livestock farming in Ireland.

From a standing start is it possible that Ireland can overtake, and indeed surpass, the achievements of other agri-centric EU nations? By way of answer one needs only to point at the achievements to date in FH 2020.

And, in other EU domains with strong influential farming influences, anaerobic digestion has achieved remarkable successes in rural employment – even if those successes came through the injudicious first generation energy crop to electricity paradigm.

By seeking the harmonious route by way of partnership with community, the Farmgas model can outstrip the best achievements of Germany, Denmark and Austria.

* 1. **Summary**:

The basis of the Farmgas vision is simple; Ireland has just 1% of the EU population – yet, because of cattle numbers, Ireland is one of the main per capita GHG polluters. By identifying stored slurry from the national herd – currently ca 40 m tonnes per annum – as the target biomethane feedstock, Farmgas will offer a considerable strategy for material progress towards the goal of sustainability in our preeminent agri-food industry, and the dairy and beef sectors.

IFES - or integrated farming and energy systems - is held up as the climate-smart way to farm in those areas where there are serious concerns - not only for food production - but also energy poverty. Both matters are fellow travellers in the context of global population growth.

The model can be easily transplanted to a northern European setting. And, the IFES concept will find a comfortable home in Ireland where the context of developed agriculture means that customary barriers – mainly technical backup issues - are irrelevant for the most part.

The dividends are manifold: rural employment, value-added farming produce and prosperity, our environment, the economy at large and a lot more besides.

By integrating bovine biomethane with road transport – food distribution in particular – Farmgas will establish unshakeable climate change credentials, especially appropriate to Ireland’s farming situation.

So, a twin benefit accrues – a realistic, and honest, effort to tackle national environmental problems, and the only way to fulfill obligatory renewable transport targets by indigenous means.

**4.0 Recommendations:**

1. Rewrite NREAP.
2. Institute a high-level inter-departmental body to enact rigorous climate change measures – under the leadership of DAFM.
3. Support biomethane production – and bovine biomethane in particular.
4. Re-assess the dominant waste-to-electricity model in the context of the needs and the national significance of agriculture.
5. Install a bio-CNG blend – preferably including bovine biomethane as the bio element – as the road transport fuel of choice.
6. As two of the major GHG contributors; integrate Agriculture and Transport in a beneficial liaison to deliver a quantum climate change defence measure.
7. Stimulate awareness that “Electricity” and “Energy” are not freely exchangeable terms, while informing the population that the Heat and Transport sectors represent more than 80% of national requirement.
8. Reconfigure the national anaerobic digestion policy paradigm as a hybrid - between the presently dominant British waste management model, and the energy crop norm preferred in agri-centric domains.
9. Establish climate change and environmental protection as the basis of renewable energy strategy.
10. Re-evaluate wind electricity.
11. Rewrite NREAP.

**5.0 Supplemental:**

**5.1 Discussion:**

**5.1.1 DAFM Takes Point Position:**

This year, in Ireland, some 40 m tonnes of cattle slurry will be stored over the winter months. Next year the figure will be greater with continuing escalation in succeeding years, as the aims of Food Harvest 2020 progress towards realization.

There is no need to discuss climate change, the environment, sustainability, and water security in the context of GHG emissions and the national herd; people are only too aware of the hazard, but equally convinced of the paramount importance of the dairy and livestock sector. Can we square the circle on this dilemma?

But, is that the complete truth? Are all sectors equally aware of the significance of the threat posed by bovine emissions? Are we turning a blind eye or, indeed, is it simply an example of the parable of the blind men and the elephant? Each expresses his interpretation in accordance with his perception.

What do our blind oracles in DCENR, DAFM, DTTAS and DECLG tell us of the elephant in the living room that is bovine biogas? After all, these are the soothsayers tasked with handing down guidance to the people on the matter.

Each one of these has a hand on a part of the beast, and each is entitled to pronounce on aspects associated with its management; tools and technology such as anaerobic digestion, its use in energy production - generation of electricity, heat and transport, rural employment, environmental protection etc. Do they communicate?

And, who is the ringmaster – who is in charge? DCENR appears to be in the lead position - is this the best option? Given the huge significance of the agriculture sector, and the agri-food industry, to indigenous industry and the rural population, why is DAFM not in the lead policy position?

Is climate change, the environment, and GHG emission etc, really, the most significant problem that Ireland faces? Are we in national denial - like the frogs in the pot – taking no notice as the water comes the boil!? Can we take on these challenges and others, such as economic growth, and optimize a process that identifies a coherent, cohesive course forward?

In recent years, the Economic Management Council was established to manage the national economic crisis – if climate change, the environment, the rural economy, agri-food and sustainability are of similar significance, why not a similar body assembled from the membership of the above listed blind oracle society?

Appoint DAFM to point position on a mission that is characterized by urgency in place of complacency. That’s what the state of Israel did in recent years – their response to a similar national nexus was an executive inter-departmental body tasked with the design of a strategy that would function in a multi-dimensional integrated smart matrix. Why not here?

**5.1.2 Rewrite the Book of NREAP:**

Unlike the designers of FH 2020 - who find it necessary to regularly revisit what was an excellent first draft - the originators of NREAP believe that the first issue revealed perfection. Subsequently, the only revision to NREAP has been deletion of any reference to a relevant native biofuels industry.

Essentially, NREAP can be summed up today, as merely wind generated electricity - and a composting sector that limps along in a state of constant decline. Both the now defunct biofuels sector and the composting industry are victims of ill-considered policy, and government neglect.

Ireland has just 1% of the EU population – yet, because of cattle numbers, Ireland is one of the main per capita GHG polluters.

Since Agriculture at 30.5%, and Transport at 18.9% line up at 1 and 3 in the national GHG emissions rankings, the combination of grass'n'slurry biomethane and transport fuel creates a sublime synergy thereby mitigating the ills of both sectors.

The unique circumstances of the potential for synergous linkage between those two immense subsets of Agriculture and Transport – the preeminent dairy/livestock sector and HGV food distribution – provide Ireland with a singular opportunity to offer the world a paragon of creative response to the challenge of climate change.

But, do the blind oracles of DCENR see the possibilities? Of course not – they’re blind aren’t they? They have a handle on electricity and waste management, and that’s their experience and their never changing perspective. Can they make the connection? Flat-earthers are hard to move.

Because DCENR adjudicate from a perspective that is familiar with urban waste, that’s the only part of the biogas elephant this authorative blind oracle sees! In 2011, Intertrade Ireland put all island estimated annual organic fraction of municipal waste at 600000 tonnes.

The same study estimated the contribution from industrial and commercial sources as 900000 tonnes – not a serious climate change hazard when set beside the 40 m tonnes of cattle slurry – and that’s just the ROI figure. Patently, present policy is directed at an “ethical” rather than an environmental problem.

The struggling composting industry faces significant competition for organic waste feedstock – from landfill, export to renewable industry clients overseas (currently 300000 tonnes), and anticipated incineration facilities in Dublin.

**5.1.3 Climate Change Central:**

If government is serious about climate change, it must tackle the overwhelming environmental problem represented by that 40 m tonne slurry lagoon. The best solution is anaerobic digestion of stored cattle slurry with surplus grass, and upgrading of the resulting biogas to biomethane for use in HGV transport– especially when directed to food transport.

When allied to the climate change strategies already incorporated in the FH plan, this will provide a global exemplar for sustainable dairy and livestock production. However, support means are necessary and, significantly, the incentive measures must be in the form of a tiered structure.

Such supports prevail in domains where both the hazard and the value of bovine biogas are understood – in Germany, Denmark and Austria for instance.

The standard “one-size-fits-all” type incentive measures - so popular in these islands – will ensure that development of biogas resources will be confined to the organic municipal/industrial/commercial pools. This miniscule resource will ensure that biogas/biomethane will remain at the curiosity end of the national fuel spectrum

Unlike DCENR, DAFM understand, and know all about biogas. But, because the entrenched NREAP model proposes the introduction of potentially bio-hazardous organic waste into the farm environment (to improve the financial performance), DAFM has been compelled to institute regulatory measures necessary for the protection of a vital national industry. A stalemate - and a mere handful of on-farm digesters – has ensued.

As a result, in the struggle against GHG emission and climate change, the livestock and dairy sector has been denied the most effective technology available. This ongoing failure to engage effectively with this grave problem is a consequence of blind loyalty to the prevailing waste-to-electricity model for on-farm anaerobic digestion.

An insubstantial financial incentive mechanism – the worst in the EU - and inadequate electricity grid infrastructure has compounded the problem. However, for DAFM, the dilemma has been rendered more painfully complex by the proposal that grass must be co-digested. to compensate for the energy inadequacy of slurry.

This is JD Murphy’s formula, and it is a derivation of the earlier energy crop model adopted in agri-centric domains. The Murphy model places the “grass’n’slurry” paradigm into apparent conflict with the ambitions of FH 2020 – even though the proposed grass “take” is rather insignificant.

Murphy offered that, biomethane from just 100000 ha out of 4m ha of Irish grassland, when digested with a mere 5% of annually stored slurry, is sufficient to deliver the national RES-T obligations. Spectacular, when one considers that DTTAS have already conceded that the task is impossible, through indigenous means - a not inconsiderable factor.

At Farmgas we contend that, rather than basic fulfilment of a simple transport commitment, the goal ought to be an achievement in the area of climate change and the environment.

After all the ultimate purpose of RE initiatives is climate change essentially – and not the avoidance of financial penalty imposition. This perspective would lead the Murphy model down the road of the integrated Transport/Agriculture.

**5.1.4 New Era Technology:**

But, even the all-seeing DAFM eye will not be aware of developments that have taken place in the German bioenergy industry in the years following their Teutonic Tiger era. The “food or fuel” debate caused policy makers there to reconsider the crude energy crop to electricity model, and compelled technology suppliers to rethink their fundamental premises.

A remarkable new generation of technology has emerged, based on the fundamental design premise of waste farm feedstock – viz livestock slurries. The potential to extract an additional 30% of biogas from a depleted resource such as cattle slurry has turned the model for on farm anaerobic digestion on its head - truly.

Previously, in order to deliver a semblance of satisfactory financial performance, a grass and slurry digester, that would be secure in its compliance with ABP regulations, required a sizeable presence of grass in the feedstock.

Farmgas represent the new technology generation and, because slurry can now be reckoned as a factor in energy consideration, the model for grass and slurry digestion has been transformed – a far more benign situation will develop than the scenario mapped out in JD Murphy’s study series.

Very modest quantities of grass are required in the new model, and the “every blade of grass” debate that the ambitious FH 2020 has sponsored so animatedly, is given adequate answer.

At Farmgas, we venture to suggest that, so radical and beneficial is this new technology, its establishment in the livestock/dairy nutrient/waste infrastructure is vitally in the national interest.

**5.1.5 Natural Gas in Transport:**

Ireland is almost totally dependent on oil for Transport, and fossil fuel imports costs the country €6.5 bn annually – some 50% on fuel for transport.

Natural gas can serve the complete Transport spectrum through to HGVs - and these are easily the dominant source of GHG emissions. Converting just one typical heavy-duty diesel truck to NG is the pollution reducing equivalent of removing 325 cars from the roads.

And, by displacing diesel, there are considerable benefits to health, with research in Italy - more than 1 million NG vehicles - supporting this claim. NG is the fastest growing transportation mode, and that there are more than 20 million vehicles worldwide?

Natural gas is the transport fuel of the future. It is the cleanest fossil fuel by far, and resources are estimated at over 500 years. Blended with biomethane it can deliver the most outstanding GHG savings, and unlike emobility, it serves the complete road transport spectrum up to HGV.

The technology is mature, and CNG is the fastest growing fuel type – far exceeding potential contributors such as hydrogen, hybrids or emobility.For all of these reasons and more, natural gas should be the road transport fuel of choice – just like any number of Asian or South American countries.

**5.1.6 The Nuts & Bolts:**

So, how many on-farm AD units do Farmgas plan? Germany and Austria provide excellent examples for AD in an energy crop production application – as opposed to the waste management strategy favoured in Britain and Ireland.

The model promoted in Germany and Austria has resulted in significant social, environmental and economical benefits for rural communities – more than 250 thousand people work in the German bioenergy sector.

Austria, with a land mass and farm profile not dissimilar to Ireland, offers a useful comparison. With more than 50% of its 2.6 mHa of farmland given to food production, and about 2.5 m livestock units, Austria can boast over 350 rural AD units. There are 5 AD units in Ireland and some 10000 in Germany. Germany has some19 m Ha in farmland and Ireland 4.3 m Ha.

Austria was one of the first European nations to institute policy supporting the view that biomethane for road transport fuel is the optimum outcome for on-farm AD and, with 180 filling stations, Austria now offers the best availability of CNG in Europe.

To date there are less than 100 on-farm AD units in Britain and Ireland where policy - the waste to electricity paradigm - has acted as a most effective barrier. However, in recent years, the introduction of the RHI in Britain has led to a significant increase in the construction of AD facilities. As the acronym suggests, the measure is intended to promote energy production in the neglected Heat sector.

Because of its population, Britain produces much more organic waste of municipal/commercial/industrial origin than Ireland. But the notion is worth considering in the Irish context, where such “gate fee” supported feedstock, could make a useful supplement to renewable energy in the struggle to reach targets set for the Heat sector.

With a cattle population numbering some 11 million, according to the RASE, Britain’s cattle produce some 90 m tonnes of stored slurry annually. In Britain, however, deep-seated “waste to energy (electricity)” attitudes also prevail, and there has been limited development of on-farm AD resources.

But with increasing awareness of the influence of bovine GHG emissions in climate change, pragmatism may play a part in a significant departure from the established waste management paradigm.

The NFU would like to have 1000 digesters in place on British farms before 2020. And, work done by the AEA and the RASE indicates that, for greatest impact, low-cost AD plant of the type proposed in the Farmgas model, should be introduced in dairy herds starting at 100 cows upwards.

Significantly, the NFU endorse the Farmgas position on the adaption of an environmental/climate change model. Pointing out the perverse notion of incentivizing farming to produce CHP electricity in an inappropriate setting – just like Ireland – they maintain that the inducement should encourage protection of the environment.

In Ireland’s case, the latest published work from Teagasc, Grange, suggests that 140 on-farm units is a useful starting point. And recent studies presented to relevant Oireachtas committees put forward something of the order of 1000 units.

Given the German and Austrian achievements, 1000 farm embedded units is not unreasonable – most especially if the IFES Campus program is initiated to stimulate community support in place of odium.

The CEDRA report cited construction and food production as occupations particularly appropriate to the traditional skill-sets of the rural population. The construction of 1000 AD to biomethane facilities in the Irish landscape means many Irish jobs of the kind to which country people gravitate, and welcome so readily.

The CEDRA also identified high-end and value-added food sector employment as being suited to the traditional rural cultures and practices, and this is precisely the kind of employment that the Farmgas IFES Campus would hope to foster.

**5.1.7 The Bounteous Beatitudes of Bovine Biomethane:**

Biomethane derived from grass introduces no land use concerns and, significantly, farm derived biomethane is an indigenous feedstock. Unlike liquid biofuels – grass and slurry biomethane satisfies all sustainability criteria. And, again uniquely among biofuels, biomethane can be blended in any proportion with its fossil counterpart.

As stated previously, Farmgas ambitions are firmly founded on the internationally acclaimed research of UCC's JD Murphy, corroborated by the work of Teagasc in Grange and Oak Park.

JD Murphy and his team have shown that surplus grassland – a mere 100000 ha from 3.9 m ha – when digested with just 5% of slurry produced by the national herd, is enough to satisfy obligatory national RES-T requirements, when blended with natural gas on a 10% basis.

However, technology developed under post “*Teutonic Tiger”* conditions in Germany can deliver a 30% increase in biogas yield. This means that the already excellent case for “bovine biomethane to transport” can be enhanced to great effect.

This is excellent news, but there remains the significant question of adequate fodder supplies in the light of the fodder crisis of 2013 and, most especially, the requirements of Food Harvest 2020.

And, happily, this crucial question has been satisfactorily addressed by eminent researcher Padraig O’Kiely and his team at Grange in their recent published paper titled “*How much grassland biomass is available in Ireland in excess of livestock requirements”.*

In this significant paper, the Teagasc team demonstrated that, with fertilizer application carried out to the upper permitted limits, Irish grassland was capable of almost 100% yield increase.

As a means of managing slurry, anaerobic digestion is outstanding and cited benefits include the potential to reduce, or eliminate chemical fertilizer. When one considers that for every kilogram of fossil fertilizer eliminated, there is corresponding saving of 6 kg CO2 emission. This is an immense contribution to the climate change challenge.

Other environmental benefits include greatly reduced risk of watercourse pollution and better soil characteristics compared to slurry, along with reduced emission to air – significantly GHGs, odour and ammonia.

Other benefits cited are improved slurry management and handling, along with less crop taint and decrease in re-grazing times. Importantly, increased nutrient uptake and improved ability to target crop nutrients are listed among other benefits.

**7.1 The Last Roundup:**

If anything is to happen in the area of on-farm anaerobic digestion, there must be a radical change in government policy.

So, what changes are needed? Firstly, it must be accepted that the current basis in the national strategy for on-farm anaerobic digestion is just plain wrong. In these islands on-farm anaerobic digestion is regarded as a waste management task.

In any case, nothing has taken place in Ireland during those years gone by when other nations were setting down a trail-blazing path for on-farm AD - and with great social and economical benefits.

Benign conditions, not alone need be put in place, but their continuity must be guaranteed – in the recent past, investors in the bioenergy sector have been badly treated.

Perhaps this explains the dismal response to date to those so-called incentives for on-farm AD – at least in this respect, Irish people have proven to be measured in their assessment.

In Britain and Ireland, we have been witness to the total stagnation that has been the result of an urban waste management policy. In places with an influential farming sector, on-farm AD is regarded as an energy production operation, and countries such as Germany, Austria and Denmark have enjoyed enormous benefits.

Another crippling aspect of renewables policy in the context of on-farm AD production is the national fixation with electricity generation. This makes very little sense in a situation where the grid infrastructure is uneven, and accessibility is expensive and unpredictable. But, more importantly, REFIT is totally inadequate and there is little beneficial use for the heat energy produced

So, our preferred national policy is to use on-farm AD to produce biomethane for road transport purposes. And, once again, we refer to the research of JD Murphy. Murphy and his team have shown that surplus grassland - a mere 100000 ha from 3.9 m ha - when digested with just 5% of slurry produced by the national herd, is enough to satisfy national obligatory RES-T requirements.

This can be achieved by upgrading the resulting biogas to biomethane, and blending it on a 10% basis with natural gas - the cleanest fossil fuel on the planet. Biomethane is identical to the methane molecule in natural gas and, therefore can substitute for this component in any proportion. No other renewable fuel is enabled in this way.

Importantly, these notable figures will be surpassed with the introduction of Farmgas’ new generation technology. This technology is capable of extracting some 30% more energy from depleted feedstock resources such as animal manures and slurries.

But, it is imperative that a tiered incentive structure is introduced to compensate for the impoverished nature of slurry as a feedstock - even with the new technology, and an adequate presence of grass in the substrate.

Biomethane production is not supported in any way; "cow'n'grass" biomethane is costly to produce; the ca.10% resource represented by urban/food industry waste is not insignificant, easily accessed and acts to create a stranded resource of the much greater "cow'n'grass" resource; and natural gas is not a road transport fuel option at present - and this list is just for starters!

So, there is the size of the challenge - overturn current policy and replace it with an enlightened policy that will allow for all of this. Among policy makers there seems to be barely an awareness of the potential of biomethane to be a remedy for a host of the concerns that blight life in Ireland today.