Response to Consultation Document

on

All-Island Energy Market Renewable Electricity – A 2020 Vision

Issued by

Sustainable Energy Working Group of the All-Island Energy Market Joint Steering Group

Submitted by

Bord na Móna
Main Street
Newbridge
Co. Kildare

September 2005

Intoduction

The Department of Communications, Marine and Natural Resources invited submissions to the consultation document All-Island Energy Market Renewable Electricity – A 2020 Vision Issued by the Sustainable Energy Working Group of the All-Island Energy Market Joint Steering Group. The Bord na Móna response to this document is presented below and structured according to the questions raised in the consultation document.

Sustainable Energy Policy

Q1. What are the drivers for RES-E policy and can they be prioritised?

1.1 Environment

The adverse impacts of climate change associated with increasing greenhouse gases and the positive effects of renewable energy in reducing or mitigating these adverse impacts has been one of the key international drivers of RES-E policy to date. Ireland has endeavoured to contribute to greenhouse gas reduction by various actions aimed at meeting its emission reduction targets set as part of the burden sharing agreement resulting from the EU participation in the Kyoto Protocol. It is important and necessary for Ireland to fully play its part in this effort at reduction but it must be recognised that, because of its size in terms of both energy demand and environmental emissions, it can only make a small contribution in global terms. Nevertheless, considering the weight of scientific evidence supporting the linkage between manmade greenhouse gases and climate change environmental issues should remain a primary driver of RES-E policy.

1.2 Security of Supply

The RoI is almost 90% dependent on imported fossil fuels to meet its energy demand and this level of dependency is reflected in the electricity generation sector. The island as a whole has only limited known fossil fuel resources that are economically recoverable at present. Furthermore, there appears to be no high expectations that further fossil fuel resources that are economically recoverable will be discovered in the jurisdictions in the future. World population and energy demand is growing and the IEA projects that world demand for oil in 2030 will be 50% higher than it was in 2002 and that demand for gas will almost double. While advances will undoubtedly be made in oil and gas recovery, extraction from wells in deeper water and in non-conventional deposits the fossil fuel resources of the planet, while not all yet discovered, are nevertheless finite and we will sooner or later arrive at the stage when demand for oil and gas will outstrip supply. When this situation arises it will certainly lead to higher energy prices and possibly affect its availability and in either case will be a key international driver for alternative energy sources.

Considering Ireland's peripheral location geographically relative to the known resources of oil and gas (at the end of a very long pipe and with other countries abstracting their supplies first) and its limited economic power it is likely to be one of the first developed countries to suffer in both energy supply and economic terms as a result. Clearly therefore the imperative within the period to 2020 is for Ireland to secure its own sources of energy by developing the renewable resources that the

country has in abundance. There are other alternatives to oil and gas such as coal and nuclear but Ireland doesn't have these natural resources either and while nuclear is considered carbon neutral it has many other issues associated with it not least that of safe disposal of the resultant contaminated waste. For the country to have a secure supply of energy into the future it must increasingly develop its indigenous resources. This security of supply issue should have equal priority with the environmental issues and also be a primary driver of RES-E policy. By pursuing RES-E policies based on it the other key fundamentals of current energy policy, environmental sustainability and economic competitiveness will almost inevitably be achieved in the longer term.

1.3 Economic Competitiveness

Ireland is becoming increasing dependent on gas to supply its electricity needs. Any interruption of the gas supply lines would have serious consequences both in the short term and long term for the economy as a whole. In the long term competitively priced electricity can be assured by having a high proportion of our electricity generated from renewable sources as it can ensure that we have supply security based on indigenous resources and which is not subject to interruption or price fluctuation due to international events over which we have no control. Job creation associated with a significantly increased proportion of our energy coming from indigenous resources, particularly in rural areas, would be a very desirable side effect. Furthermore, greater levels of RES-E will help to reduce the impact of climate change resulting from manmade greenhouse gas emissions while at the same time eliminating or reducing any potential penalties for unwanted environmental emissions.

The issue of economic competitiveness must be looked at as a long term one. Energy is a key component in any modern economy and its ready availability at competitive prices is an essential to ensure a vibrant economy with stability and growth potential. In the timeframe under consideration fossil fuel derived electricity is expected to rise significantly in price. As we get closer to 2020 greater proportions of RES-E will be needed in the country's energy mix to ensure both the availability and price of energy to maintain the country's economic activity.

Q2. How should RES-E policy interact with other government policies (e.g. waste, agriculture, environment, etc.)?

Ideally RES-E policy should be co-ordinated with other government policies to the extent that the policies are fully compatible with and complement each other. Like renewable energy, each of the areas mentioned in the question will have its own technological, commercial and policy development. While it would be very desirable to have an approach that ensures full compatibility it is inevitable that there will always be some elements of policy in the different areas that are not fully complementary or indeed may be contradictory to some extent. Full coordination is a bit like the Holy Grail - it would be wonderful to have it but no one has been able to secure it yet. While interaction issues should be minimised they should not delay or unduly inhibit the introduction and pursuit of a RES-E policy which is devised to give a secure electricity supply at economic cost and which is environmentally sustainable. Any issues that do arise may have to be dealt with using secondary instruments or mechanisms if they are significant enough to warrant it.

Achieving interdepartmental coordination of policies in a single jurisdiction is a difficult enough task; to expect to fully achieve it when two jurisdictions are involved would be very optimistic. The broad principles and thrust of policy in the various areas should be consistent with each other however it is unrealistic to expect that all the detail will be. To make progress in realistic timeframes a pragmatic level of tolerance of sub-optimisation between the various policies is likely to be required that will enable the major objectives of the policies to be achieved.

Regional Energy Markets

Q3. Do the opportunities or obstacles facing RES-E differ between the two jurisdictions?

Bord na Móna has no response to make to this question.

Q4. Are there areas of RES-E policy that should not be considered on an all-island basis, and why?

Bord na Móna has no response to make to this question.

Q5. To what degree are RES-E policies currently aligned?

Targets are in place in both jurisdictions for the consumption of electricity generated from renewable sources – 13.2% by 2010 in the case of RoI and 12% by 2012 by NI. The RoI has used competitive bidding in the AER competitions in the past and has just announced the headline figures for a fixed feed-in tariff whereas in NI a Renewables Obligation Certificate system is in place since April. Thus while the overall percentages of the targets and their timeframes are similar the policy instruments either currently employed or expected to be employed to reach these targets are quite different. Similarly there are differences in the secondary instruments that are applied in each jurisdiction.

Any alignment of policy in the future should be done in a manner that does not impact negatively on the pace of penetration of RES-E or the level of confidence in the sector by key stakeholders. In moving to an all-island market it is also important to ensure that there is equality of opportunity in both jurisdictions.

Q6. How should all-island RES-E policy inform and be informed by EU and UK RES-E policy?

Many of the RES-E policy targets that currently apply in the RoI have been set as a direct result of EU policy or directives in what is likely to have been more of a top-down rather than bottom-up process. It is likely that the EU will continue on its course for the deployment of more sustainable energy technologies and if this is the case it should, along with the commitments of other nations, provide sufficient impetus to ensure technological development and innovation in this area. While this

sets the international context for Ireland it is not sufficient to simply follow the course set by the EU and at its pace as there are imperatives and opportunities for Ireland that are not the same in other member countries. The quantity and diversity of the renewable energy resource that Ireland has makes it possible for Ireland to accelerate the deployment of RE beyond the broad targets set at EU level. This will serve to secure Ireland's energy supply (or at least provide a significant hedge against rising international energy prices), minimise energy-related environmental emission penalties and create a positive balance of payments benefits for the country that will be reflected in greater levels of indigenous employment in the energy supply sector.

UK policy is also obviously influenced by the broader EU RES-E policy context but a key difference between the RoI and the UK is that the UK has taken more positive action to put in place policies and mechanisms that will help to minimise its energy-related environmental emissions. That said however, the UK has a much bigger electricity market than exists in Ireland and policy instruments that may be successful in the UK may not be equally successful in an Irish all-island market if adopted without appropriate modification. Substantial interconnection between the two islands might alleviate this problem but until such time as this occurs it may be necessary to use policies that are specifically designed for the all-island situation based on rational analysis of what is required and what will be capable of practical application and implementation.

Q7. What effects will interconnection (North-South & East-West) have on RES-E, and how should it be operated and regulated?

In general interconnection should reduce the reserve required to be carried on the interconnected system for any given level of risk of loss of load. This in itself is a positive for interconnection. The geographical spread of intermittent RE generators gained as a result of interconnection, and the associated levelling out of the aggregate output from these plants, should also help to make it easier to operate the interconnected system. Interconnection should also help to reduce the need for constraint of any type of plant on the system.

However, in a gross pool market, if interconnection reduces the opportunities for intermittent RE generators to operate when prices are at their higher levels (especially if RES-E projects were participating in the market without any policy mechanism providing fixed or additional reward for their output) it would have a negative effect. A scenario such as this could make RES-E projects un-bankable if it introduced high levels of risk in projected revenue streams. The expectation or risk, in advance of interconnection being put in place and in the absence of a policy measure to remedy it, of a scenario like this arising could also make projects un-bankable. Furthermore if the interconnectors were to be regulated in a manner that facilitated the operation of brown generators it would disadvantage the RES-E sector.

Clearly greater levels of interconnection bring potential benefits and risks to RES-E projects. The manner in which interconnection is regulated will have a major impact on this. Because of the abundant renewable energy resource that Ireland has and the imperative of developing it to achieve a greater level of security of supply, any existing and new interconnection should be regulated and operated in a manner that

maximises the benefit of the interconnection infrastructure to the country's security of supply without any disadvantage to RES-E. It should be operated and regulated in a manner that facilitates greater penetration of capacity and output of RES-E.

RES-E Resource

Q8. What could the level of penetration of RES-E electricity be in 2020 on the island of Ireland? (Please include any analysis that supports your response.)

8.1 Electricity Demand and Resource Potential

Gross electricity consumption, on an all-island basis, is predicted in the consultation document to be 54,604 GWh in 2020. The consultation document also presents estimates, based on a variety of different reports, of the RES-E resource potential for the island as a whole in 2020 giving a range of 13,529-24,129 GWh. Clearly therefore, based on historical estimates of the resource potential and presumably the state of technological development in the respective technologies at the time the reports were prepared, a penetration level of 50% RES-E in 2020 is technically possible. While there probably is a variety of reasons why the upper figures in the ranges given for some of the technologies cannot be achieved there are probably equally valid reasons why the upper figures in the ranges for other technologies could be exceeded. Targets, while they need to be tempered by realism, should also be challenging if they are to have any real driving effect. With allowance for the technological development that will invariably take place over the target timeframe period there is no insurmountable reason why, with appropriate policies in place, a RES-E penetration of 50% in 2020 cannot be achieved.

The actual penetration level will depend to a large degree on the target that is set, the resources that are applied to putting the enabling infrastructure in place and the willingness of key players in the sector to make it a reality. The target that can be achieved is dependent in large part to the political will to make it happen.

8.2 Technology Development

Different renewable energy technologies are at various stages of the technology development cycle; some of them such as wind energy are relatively mature and capable of competing to some degree with some of the more conventional generating technologies. There will undoubtedly be further technological development in all of the renewable energy technologies which may bring others to the fore in terms of commercial viability in the future. While policy makers would naturally like to be able to decide in advance on some rational basis what the most beneficial mix of technologies will be this is not realistically possible. What must be recognised is that the conventional technologies for electricity generation are getting more expensive, use a depleting resource which is sourced internationally by Ireland and for which there is strong international demand which may in the timeframe under consideration exceed supply. While they may appear to hold some risk of increasing prices, policy decisions made now to increase substantially the penetration of renewable energy, will be looked on in the future as visionary.

‘2020 Vision’

Q9. How should suggested levels of penetration be decided?

9.1 Maximisation of RES-E

It may seem appropriate for some to determine the penetration of RES-E at any particular date in the future by trying to shoehorn it into the generation mix and infrastructure as it stands at present with maybe some slight modifications. While this may seem to be a rational and pragmatic approach it ignores the fact the generation mix that we have now and indeed may have for some considerable time into the future is, and will be, almost entirely dependent on imported fuels. The country needs a good hedging mechanism against the uncertainty of both the price and availability of fossil fuels. What may seem now to be stretching targets for RES-E penetration will probably seem like easy goals closer to the delivery date when the pace of technological development is taken into account.

With the renewable energy resource that Ireland has it should not just fall in line with targets that may be appropriate for other EU member states. It should be striving to maximise the use of RES-E in a manner that respects environmental sustainability while positioning the island to have competitive and affordable prices and doing so in a timescale that will ensure secure electricity supply into the future.

9.2 Stage of Technology Development

Technologies that are commercially competitive or close to being commercially competitive now should be examined to determine what level of penetration they could reasonably be expected to provide in 2020. Any enabling infrastructure required should be identified and the timeframe and cost for such infrastructure estimated. Penetration levels for other technologies should be based on the practical resource available, the stage of development of the technology, the current economics (with some improvement factors built in for expected technological development if appropriate). Where support or subvention is shown to be required then the level of this should be set against the likely rise in the cost of generation (fuel price rises; greenhouse gas emissions costs) from conventional sources over the period under consideration. Other indirect factors that may be even more difficult to cost, such as the impact on mobile foreign direct investment in the country if electricity cannot be assured under a mix of generation using mainly conventional thermal technologies, should also be factored into the analysis either by quantitative estimation or qualitative assessment.

9.3 Key Driving Factors

Mentioning the resources that are applied to putting the enabling infrastructure in place may suggest that high levels of penetration of RES-E will be expensive. While there is no doubt that investment will be required to put the appropriate enabling infrastructure in place the resulting system should ensure:

(i) A secure supply of electricity for the island that will enable continued economic and social development largely independent of international resource availability considerations

(ii) Ireland meets its moral obligation to contribute to the international effort to reduce the impacts of greenhouse gas induced climate change while at the same

time minimising or eliminating completely any penalties that could be in place for excessive greenhouse gas emissions

(iii) Average electricity prices that are stable, predictable and decoupled from potentially volatile international fossil fuel prices. This in turn will provide a predictable input cost for industry and could be a key factor in retaining existing industries on the island or attracting new industries to set up.

Q10. What type of plant (RES-E) should be promoted through appropriate financial, regulatory and / or planning policies?

At present hydro, wind and bioenergy plants are probably the most technologically developed and commercially viable RES-E technologies in Ireland. Other forms of renewable energy have significant resource potential and while technologies are in various stages of development for their use in RES-E they are generally more expensive. The rational approach is to put a range of policies in place that enable plants that use the more mature technologies to be developed in a manner that gives sufficient support to ensure that developers get an adequate return while the consumer gets the benefits (many of which are not priced into the final cost) of greater levels of RES-E. The available raw resource, and the stage of development of the respective technologies, that can be harnessed should be a key factor as any policies that are devised must be capable of delivering rapid increased penetration of RES-E.

Technologies that are less commercially viable at present should receive support for demonstration or pilot projects that will help to create confidence in the technology or supply chain as appropriate. This should apply in particular to renewable resources that are abundant on or around the island and to technologies that have the potential to act as catalysts and have a major impact on, for example, the penetration or costs of the resultant RES-E.

Q11. Should NI and RoI be seeking to lead in any technologies?

The combination of Ireland's very good RE resource, much of which results in (or will result in) intermittent output, with its small electricity system with limited interconnection at present means that it will have to develop solutions to putting significant amounts of intermittent RES-E on such a grid. We believe that a high penetration of RES-E can be achieved in Ireland and much if this can be achieved with grid infrastructure improvement, interconnection and the adaptation of the existing generation mix. However it will require the combination of innovative policies, technological development and grid management techniques. Because of the resource that exists and the projects already in the pipeline, Ireland should be seeking to take an international lead in technologies that enable increased RES-E penetration. Doing so would have a twofold effect; (i) it would help the country to get efficient utilisation of its renewable energy resource and (ii) it would create an expertise and competence within parts of the industry that could be marketed and exported as product offering in its own right. Energy storage technology could play a key role in RES-E penetration in the future and is an area that the RoI and NI should endeavour to lead in considering both the abundance and intermittent nature of many of the island's renewable energy sources.

Q12. What primary policy mechanisms should be put in place to meet the suggested penetration level and how should it be applied? What prices are required? (Please include any analysis that supports your response.)

12.1 Feed-in Tariff

The RoI has just announced headline figures for a fixed feed-in tariff mechanism to support 400 MW of RES-E capacity but the full details of the mechanism have not yet been released. The feed-in tariff is an appropriate mechanism for the current stage of development of RES-E in the RoI. However, its efficacy in achieving the desired levels of penetration will be highly dependent on the prices offered for the various RES-E technologies and the other terms and conditions required to create an environment that provides sufficient return for developers to pursue projects. This can only be achieved if the risks for developers are low enough and manageable so that finance can be secured at reasonable rates and revenue streams are reasonably predictable. Apart from the key element of the actual tariff itself its duration and level of price indexation are also key factors.

The policy mechanism currently in place in NI is a ROCs system which is obviously different to what will be in place in the RoI, for the immediate future at least, thus it is clear that there will be a need for some policy convergence if both jurisdictions wish to use the same support mechanism.

12.2 RES-E Premium

The ESRI in its recent paper 'Aspects of Irish Energy Policy' suggests that there is a need to award a premium to renewable energy over and above the market price to ensure diversification in the source of energy supplies. A mechanism such as this could be used as an alternative after the current feed-in tariff and could help achieve convergence between the two jurisdictions. The system could be designed to give RES-E generators a minimum guaranteed average price for their output with appropriate indexation while allowing the premium to be flexed in the event of the rise of market prices due to increasing or volatile fossil fuel prices. Such flexing could provide a hedge for the customer and policy promoter against rising fuel prices by holding RES-E prices down when the average market price rises due to volatility in international fossil fuel prices while still providing a RES-E price required to ensure adequate return on the development of RES-E projects. Obviously the premium would have to be technology specific.

Any convergence of policies to a single all-island policy must ensure that there is a smooth transition. Similarly, in the context of an all-island approach it is important that any interim policies put in place ensure, in as much as is possible, that there are equal opportunities for development in both jurisdictions until full policy co-ordination takes place.

12.3 Constraint

Whatever policy instrument is chosen it must ensure that RES-E is either not constrained in its output or if constraint is to be a feature of the system that there is appropriate compensation for it. Such compensation, were it to be the selected option,

would need to ensure an equal level of return on projects as would be the case without any constraint.

Q13. What supporting policies are appropriate, and for what technologies?

To enable the levels of penetration of RES-E referred to above in Q.8 considerable R&D will need to be carried out to ensure in particular that the whole electricity system on the island – the grid infrastructure, the generation mix, market rules, etc. - and the techniques for its operation and management are developed accordingly. A range of secondary measures should be deployed as necessary to promote and support such work.

Some RES-E technologies are more commercially viable than others but all still need support of some form or other to be viable. For RES-E technologies that still need considerable research and development work they need to be encouraged by supporting pilot scale demonstration projects that both demonstrate the technology and enable experience to be gained. While international R&D will drive the development of the technologies Ireland should have programmes in place that encourage activity in the resources that it is rich in. Clearly support for these, per unit of electricity generated, will need to be at a higher level than the near commercial technologies to make them viable.

Other secondary instruments should be applied as necessary to complement the primary policy mechanism.

Challenges to be Addressed

Q14. What are the principal obstacles for RES-E penetration to 2020? How can they be addressed?

14.1 Grid Connection

Many of the RES-E technologies are intermittent by their nature. At present the principal obstacle to RES-E penetration, particularly for wind energy, is the difficulty in securing grid connection of projects in a timely manner and with predictable connection dates. Many of the renewable resources in the country are in areas that are remote from the electricity grid infrastructure as it is configured at present or the infrastructure in the areas is inadequate to maximise the benefit of the RES-E resource in the areas. The grid needs to be strengthened into the resource areas where the National Spatial Strategy and other subsidiary spatial planning documents deem to be particularly suitable for RES-E projects so that project development is not completely frustrated.

Connection applications for RES-E projects are currently handled in a different process to that for conventional generation and in a manner which disadvantages the RES-E projects relative to conventional generation projects in the timescale that the process takes and thus ultimately in the availability of grid capacity. There should be

a presumption in favour of RES-E projects and grid infrastructure planning and the application process itself should reflect this.

14.2 Generation Mix

The characteristics of the plant in the generation mix it can have a major impact on the penetration of renewable energy. The present generation mix consists of a considerable proportion of rather inflexible plant that does not complement intermittent RES-E, particularly wind, very well. The lead time required to change the generation mix has been very long because of the nature of the investments involved. To make such a change needs considerable forward planning and failing to do such planning now will inevitably lead to insufficient penetration of RE, or a higher cost for it when the imperatives for it make it an absolute necessity.

The plant providing base load in the current generation mix, primarily CCGT, is relatively inflexible and as such does not complement intermittent RES-E. CCGT may still be the cheapest new entrant, on an individual plant basis, but it is no longer the 'best' new entrant in a system context. Where conventional plant is required, the policy should favour flexible plant that complements intermittent renewables to the benefit of the entire system and the customer in the long term. The introduction of some new open cycle generation into the generation mix would facilitate greater penetration of intermittent RES-E in a manner that is likely to minimise overall system costs for any given increased level of RES-E.

14.3 Security of Supply

The intermittency of RES-E and its impact on the security of the grid is often quoted as the reason for limiting the penetration of RES-E. This issue of security of the grid and hence of supply of electricity is on the basis that the conventional generating technologies can ensure a secure supply. However, with the exception of the limited indigenous resources being used, the fuel sources for the conventional generation are all imported. While these sources have proven to be secure in the past there is now considerable debate as to whether they will be continue to be so in the future. This should give added impetus to restructuring the generation mix and managing the electricity system in a manner that facilitates increased penetration levels of RES-E.

14.4 Energy Storage

One means of enabling increased penetration of RES-E is by increasing the level of energy storage that is on the system. This could be, for example, developing increased pumped storage hydro or using thermal storage in housing and electric heating to create a buffer between the normal supply and demand profile that pertain. There is considerable international interest in using renewable energy to produce hydrogen at times when RES-E exceeds normal electricity demand and then using the hydrogen so produced, either for regeneration at times of low RES-E output and high electricity demand or for use in transportation. Immediate research on and assessment of the options for energy storage systems that complement and enable RES-E are essential to get a complete picture of what the most economically favourable and technically achievable options are to increase the levels of RES-E in the longer term.

14.5 Support Policy

The various AER programmes in the RoI which were to support increasing penetration of RES-E have not resulted in the expected levels of installation of RES-E

projects. A significant factor in this was that the competitive bidding element of the programmes forced developers to bid prices that were subsequently found to be too low to achieve economic viability. It is essential that any future schemes provide adequate return to the project developers as, for the foreseeable future this is the principal means of ensuring that RES-E projects will be built.

14.6 Single Electricity Market Rules

The rules for the Single Electricity Market are currently under development and while the principles that will underlie the market have been outlined the detailed rules have yet to be developed. These rules will obviously impact on all generation and it is important to ensure in the course of their development that they do not place any additional barriers for RES-E.

Q15. What are the impacts of increased RES-E on the power system and operation? How can they be addressed?

Any RES-E, for example that generated from biomass, that can give steady plant output will have minimal impact on the present power system and its operation. Furthermore plant such as this would increase security of supply as the feedstock would be from indigenous sources and thus only subject primarily to domestic potential supply interruption issues.

With the current configuration of the generation mix and the grid infrastructure the intermittent sources of RES-E increase the requirement for reserve on the system. This impact may be managed in a number of ways. These include:

(i) increased interconnection with other systems

(ii) changing the generation mix to make it more complementary to intermittent RES-E

(iii) installing and using technologies that can utilise the excess electricity that can be produced from these sources when electricity demand is insufficient to meet it or to permit their operation without constraint of other plant. The corollary of this is using technologies and techniques that allow the reduction of demand when the intermittent RES-E is insufficient to meet such demand (and without carrying very high reserve on the system). Energy storage options, possibly in a centrally managed facility, that can be charged during periods of high RES-E availability and discharged during periods of low availability and high demand are an option for reducing this impact.

Q16. What are the implications for future policy of different scales of RES-E (e.g. distributed generation vs. large scale wind)? How could they be planned for and facilitated?

Distributed generation, on the assumption that its output can be matched with demand that is reasonably local, could be expected to have a lesser impact on the requirement for grid infrastructure improvement than that required for large scale wind but it would have a more dispersed landscape impact. However as penetration of distributed generation increases it could have the same effect on the grid as large scale

projects as it will eventually lead to the need for either local grid upgrades or remote deep reinforcement in the grid.

Both distributed and large scale generation need to be planned for in the system although the planning process for the types of generation may need to be quite different. Distributed generation can possibly be planned for by a general strengthening of the grid whereas large scale farms will probably need more location specific improvement of the grid.

Both large scale and distributed generation projects will need support into the future.

Q17. How should the costs and benefits of RES-E electricity be measured and quantified?

Conventional thermal generation has many impacts that are not included in the final cost of the electricity produced. Similarly RES-E, particularly from intermittent sources, has costs associated with it that are not always directly attributed to it. Equally there are many benefits associated with RES-E that are not directly priced into the electricity produced. In as much as is possible the costs and benefits of RES-E should be measured and quantified in a holistic fashion accounting for the wide range of direct and indirect costs that apply to both conventional thermal generation and RES-E so that a clearer picture of the cost benefit can be built up. This should include, for example, the macro effect of reduction in imports of fossil fuels through security of supply, employment generated in the country, reduction in environmental emission costs etc. to the micro effects of improved air quality for the individual. Where it is possible to do so, an economic value should be put on the various costs and benefits that can be quantified. Benefits such as, for example, the well being of the general population due to improved air quality should be included as a quantified economic value if possible but at least as an extra qualitative benefit if not possible to quantify accurately in economic terms.

It is debatable whether the cost of the development of the electricity grid was ever attributed to the conventional thermal generation that it originally served to transmit and distribute. It would be unfair to now charge all of the development that may be required in the grid infrastructure to increase the penetration of renewables against RES-E when the improved infrastructure will have benefits for all generators.

Q18. What are the costs and benefits of increased RES-E penetration in the island of Ireland?

There is considerable debate on the costs and benefits of RES-E and considering the depth and breadth of issues to be considered to get a holistic picture of them they are also difficult to quantify. However, from a qualitative perspective the costs of increased RES-E lie mainly in the areas of increased reserve and increased grid infrastructure. The benefits broadly lie the areas of: improved security of ‘fuel’ supply; improved balance of payments; increased employment in the country in providing indigenous energy; greater dispersion of employment into rural and disadvantaged areas; lower environmental emissions and associated health benefits;

and lower emissions costs and reduced penalties if they apply. Without access to considerable data and analysis we do not believe that we can give accurate estimates of the quantum of each cost or benefit for the range of RES-E technologies that are currently available.

Future Work Programme

Q19. What work streams should be included in a work programme to facilitate RES-E goals?

In addition to the work areas outlined in the document the following should be considered for inclusion in the future work programme:

(i) Potential costs to the consumer and the economy generally of not pursuing ambitious RES-E targets in a scenario of a carbon constrained economy and restrictions on availability of fossil fuels;

(ii) The potential impact on RES-E penetration of operating Turlough Hill to facilitate the operation of intermittent RES-E on the system.

(iii) The impact and cost of increased use of the latest technology open cycle turbine technology on the system as a means of facilitating greater penetration of intermittent RES-E on the system for various levels of penetration.