McCutcheon Halley
CHARTERED PLANNING CONSULTANTS

NPF Submissions
Forward Planning Section
Department of Housing, Planning, Community
& Local Government
Custom House
Dublin 1

31 March 2017

Re: Submission to Ireland 2040: Our Plan – National Planning Framework: Issues and Choices on behalf of the Irish Solar Energy Association

A Chara,

The Irish Solar Energy Association (ISEA) welcomes the opportunity to comment on the first stage of the process for drafting a National Planning Framework, the Issues and Choices Paper published in February 2017. This response has been prepared by McCutcheon Halley Chartered Planning Consultants and Fehily Timoney Company in consultation with ISEA.

The forthcoming NPF must be shaped by broader policy context and this is especially true in the context of low carbon issues, the subject of this submission. These are driven in the first instance by international and national priorities about climate change and energy security, followed by traditional spatial planning priorities.

The NPF will be the primary document for developing spatial planning policy at regional and local level, and assessing planning proposals against. Planning plays a key role in helping shape places to secure radical reductions in greenhouse gas emissions, minimising vulnerability and providing resilience to the impacts of climate change, and supporting the delivery of renewable and low carbon energy and associated infrastructure. This is central to the economic, social and environmental dimensions of sustainable development.

It is therefore incumbent on the Department of Housing, Planning, Community & Local Government to set robust policy and supportive statements to support the transition to a low carbon future through the development of a solar PV sector in Ireland.

Is mise, le meas,

Paula Galvin

McCutcheon Halley Chartered Planning Consultants

www.mhplanning.ie

Also in CORK
6 Joyce House, Barrack Square
Ballincollig, Co. Cork
P31 YX97
T. +353 (0)21 420 8710
E. info@mhplanning.ie

DUBLIN
Kreston House, Arran Court
Arran Quay, Dublin 7
D07 K271
T. +353 (0)1 676 6971
E. info@mhplanning.ie

Solar Context

Solar photovoltaics (PV) is one of the fastest-growing sources of electricity globally. Costs for solar PV, have fallen dramatically in recent years because of sustained technological progress, including efficiency and productivity gains. Between 2008 and 2015, the average cost of solar PV decreased by almost 80%. A "next generation" phase of deployment is emerging, in which solar PV is technologically mature and economically affordable.

The global installed capacity of solar PV was approximately 271GW in 2016. China, the United States and Japan are the top three markets, followed by our closest neighbour, the United Kingdom (UK). An estimated 22 countries (including several in Europe as well as Australia, Chile, Israel, Japan and Thailand) had enough solar PV capacity at the end of 2015 to meet more than 1% of their electricity demand.

With a cumulative installed solar PV power of c.102GW, the European Union (EU) accounts for c.38% of installed capacity worldwide. Germany and France were responsible for more than 75% of the EU's new grid connection capacity. At the end of 2015, Europe had enough installed capacity to meet an estimated 3.5% of total consumption (up from 0.3% in 2008) and 7% of peak demand. According to Solar Power Europe 4% of Germany's electricity demand is derived from solar and up to 8% in Greece.

Globally, the leaders for solar PV per inhabitant are Germany, Italy, Belgium, Japan and Greece. At the end of 2016, the UK had c.11.5GW of installed PV capacity, and electricity generation from solar has surpassed hydropower output.

In stark contrast, Ireland has no commercial solar farms and the contribution of solar PV to renewable electricity generation was just 0.01% in 2015. Ireland is the only Member State (MS) in the EU that does not provide a support mechanism for solar despite it being the cheapest source of renewable electricity generation after onshore wind.

Why is this? Ireland has significant unexploited solar resources; our solar climate is as good as Paris and 70% of the solar climate on the Mediterranean coast. But currently, there is no subsidy, or REFiT (Renewable Energy Feed in Tariff) for solar power in Ireland. The Irish Government is currently preparing a successor to the REFIT and it is widely accepted that solar PV will form part of the forthcoming scheme.

Since June 2015, 178 planning applications for utility scale solar (≥5MW) schemes have been lodged with planning authorities in Ireland. This translates into a potential generating capacity of approximately 1GW of renewable electricity, or a quarter of that required to meet our legally binding 2020 RES-E target of 40%. A 5MW solar farm typically requires c.25 acres of land and once permitted, solar farms can be deployed rapidly and are generally operational less than 3 months after the start of construction.

The deployment of solar as a renewable energy source can therefore make a key contribution in the immediate term to meeting legally binding renewable energy targets and avoiding the significant costs associated with missing these targets. A solar industry in Ireland would provide security of energy supply, diversify the fuel mix, contribute to job creation and rural development.

International, European and National Policy

Climate change continues to be one of the most serious global environmental challenges. Low-carbon, renewable electricity production is one of the most cost-effective methods of reducing greenhouse gases (GHGs) across the energy sector. It also provides the possibility of contributing to the meeting of targets in the heating and transport Sectors. ISEA would urge the Department of Communications, Climate Action and Environment (DCCAE) to continue to pursue a reduction in national GHG emissions in line with our European

and international obligations under COP21. Future policy development, including this National Planning Framework (NPF) will underpin the transition to a low carbon energy system, a low emissions economy and a sustainable society, as outlined in the Energy White Paper and the forthcoming NPF should make this explicit.

The International Panel on Climate Change (IPCC) has put forward its clear assessment that the window for action on climate change is rapidly closing and that renewable energy sources such as solar will have to grow from 30% of global electricity at present to 80% by 2050 if we are to limit global warming to below 2 degrees1 and in accordance with the COP 21 agreement to limit global warming to well below 2°C above pre-industrial levels. In this regard, the Government enacted the Climate Action and Low Carbon Development Bill 2015 which provides for the approval of plans by the Government in relation to climate change for the purpose of pursuing the transition to a low carbon, climate resilient and environmentally sustainable economy. It is noteworthy in this regard that in Section 5.2.3 of the Issues and Choices Paper it states that the "*EPA projections indicate that (Ireland's) emissions for 2020 could be in the range of 6-11% below 2005 levels rather than the -20% target, so Ireland has a lot of work to do in this regard.*

The international context of Ireland's low carbon work must be brought to the forefront of the forthcoming NPF. With the 2020 EU Climate and Energy targets now on the horizon, the 2030 climate and energy policy under development, and the recent COP21 global agreement on Climate Change reached in Paris, it is vital that action on sustainable energy is pursued more urgently than ever.

The global focus on sustainable energy brings with it vast economic and community opportunities for Ireland given the resource we have in terms of renewable capabilities and in particular technological advancements in solar. Given the appropriate development framework, Ireland has sufficient accessible resources to meet and exceed our current renewable electricity target of 30% by 2020. In the longer term, Ireland has a landmass of around 90,000 square kilometres. Electrifying our energy requirement is therefore a logical route for Ireland.

The timeframe to 2020 is a crucial period around the need to focus on the delivery of EU 2020 Climate and Energy targets. The period to 2020, and beyond to 2030 and 2050 is aligned with a period of sustained global efforts to tackle climate change through responsible energy use. The Irish Government in late 2014, agreed to EU targets to 2030 which include a binding renewable energy target of "at least 27%" and a 40% cut in GHG emissions. While the detail of these proposals must yet be confirmed through the EU's legislative process, Ireland must begin our planning beyond 2020 to ensure our level of climate ambition matches these 2030 goals.

A key area which ISEA would urge the Department to be mindful of when finalising the National Planning Framework, is maintaining competitiveness. With Ireland now progressing towards economic recovery, the issue of economic value and securing the most cost effective solutions to our low carbon transition is vital for business and energy citizens. Within the electricity generation sector, solar PV is proven to deliver one of the most cost effective renewable electricity worldwide. This point has been acknowledged by the European Commission in their publication *A policy framework for climate and energy in the period from 2020 to 20302*.

Responding to Climate Change

Since the middle of the 20th Century, a substantial increase in the production of energy from fossil fuels has given rise to ever greater concentrations of heat trapping (greenhouse gases (GHGs)) in the atmosphere. In the absence of additional measures to reduce emissions, mean surface temperature increases, by the year 2100, will likely be between 3.7 deg. Celsius to 4.8 deg. Celsius, according to the Intergovernmental Panel on Climate Change (IPCC).

[1] IPCC Fifth Assessment Synthesis Report, Intergovernmental Panel on Climate Change AR5 Report
[2] http://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX:52014DC0015

Reflecting this concern, and following on from the Kyoto Agreement, the Member States (MS) of the EU committed, in October 2009, to achieving a low carbon society by 2050, whereby GHG emissions would be reduced by 80-95% below 1990 levels. To achieve the 2050 target, nationally fossil fuels will have to account for just 19-30% of final energy demand. Non-renewable energy sources will thus make a progressively smaller contribution to our energy mix, with an eventual phasing out as we move to a carbon free society in 2100.

More recently, parties to the U.N. Framework Convention on Climate Change (UNFCC) reached a landmark agreement in 2015 in Paris (COP21), charting a fundamentally new course in the global climate effort. The deal, in short, begins to move the countries of the world in a shared direction. It sets an ambitious target, declaring that the global average temperature ought to be kept *"well below"* 2 degrees Celsius, and that countries should try to go further, limiting warming to 1.5 degrees Celsius. The deal also requires, for the first time, requirements that all parties, of which Ireland is one, report regularly on emissions and implementation efforts and undergo international review.

The immediate EU targets are

- **2020** - a 20% reduction in GHG emissions (excluding sectors covered by the emissions trading scheme (ETS)) compared to 2005 levels, including a linear reduction pathway between 2013 and 2020; and
- **2030** - a 30% reduction relative to its 2005 levels.

Economic development is strongly correlated with increasing energy use and growth of GHG emissions. Nationally. Environmental Protection Agency (EPA) figures demonstrate that the Ireland's GHG emissions increased significantly in 2015. Combined the energy industry (i.e. power generation) and transport sector accounted for almost 40% of Ireland's GHG emissions, see **Figure 1**.

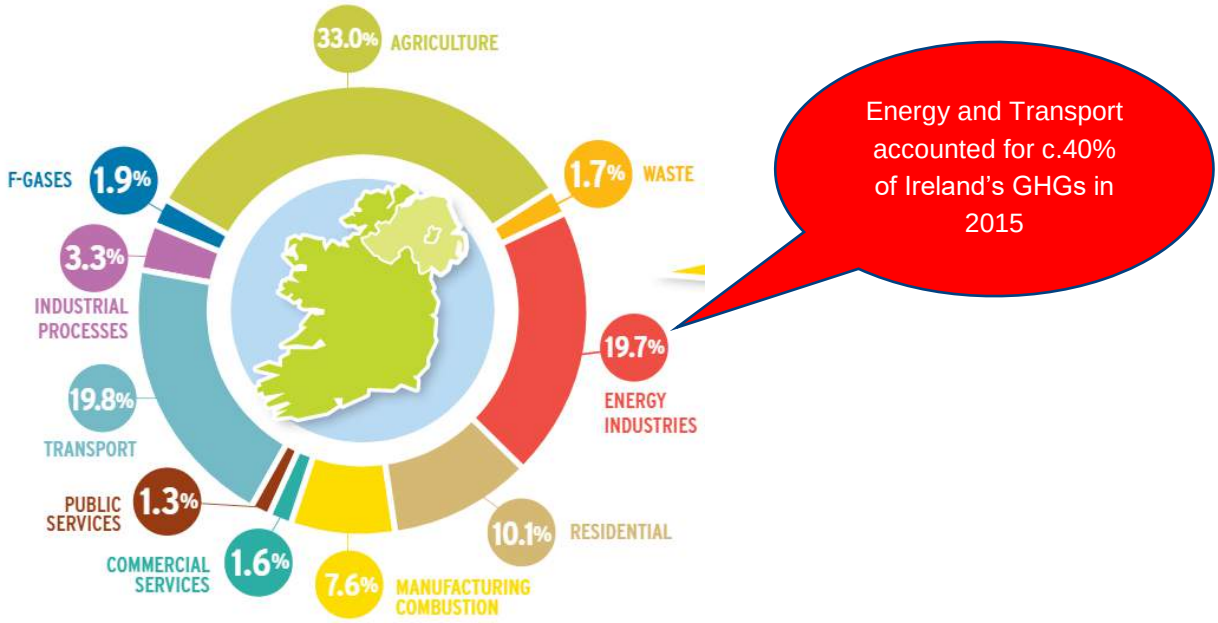

Figure 1 Sources of GHGs Ireland 2015 (source EPA)

The EPA estimate that non-ETS emissions are projected to be between 9 and 14% below 2005 levels by 2020, thus missing the target by up to 11 percentage points.

The active energy policy for Ireland, *Ireland's Transition to a Low Carbon Energy Future* sets out a policy framework for Ireland for the period to 2030. The policy establishes 2020 and 2030 as important milestones in this transition. The Policy includes longer-terms goals as follows:

- 2050: reduce energy-related CO_2 emissions by 80-95%, compared to 1990 levels. To achieve this, fossil fuels will be 'of the order of 19-30% of final energy demand' by 2050. Fossil fuels currently represent over 90% of consumption; their contribution will be 84% in 2020, if the 2020 targets are met.
- 2100: Ireland will have zero or negative GHG emissions by the end of the century.

A business as usual model is not sustainable and measures to decarbonise the energy sector are urgently needed. Solar PV is a key technology that can assist with the State's transition to a low carbon society. The large-scale deployment of solar PV would lower GHG emissions from the energy system while still satisfying the demand for energy services.

In this regard, the forthcoming NPF should recognise the key role of planning in securing the international priority of securing a radical reduction in greenhouse gas emissions and associated carbon free society. The low carbon agenda must be a key element within national planning policy. To achieve large-scale deployment of solar PV in Ireland, the NPF, must articulate strong planning policy support to assist local planning authorities design their policies to maximise renewable and low carbon energy development.

Energy Security

According to the SEAI, Ireland imported 88% of its energy needs in 2015 which cost the state approximately 5.7 billion euros (€15.6m per day). Ireland is in the unenviable position of being one of the highest dependence in Europe on imported fuels, which leaves Ireland vulnerable both in terms of meeting future electricity needs and ensuring price stability. Energy imports are crisis prone and vulnerable to disruption and their stability is questionable, the State is thus highly exposed to currency fluctuations and fluxes in commodities (i.e. oil and gas). The need to diversify our energy mix is thus a matter of strategic importance.

Energy demand is inextricably linked to economic growth and this is evidenced in SEAI data whereby energy use increased by almost 5% in 2015, which was the first time since the economic downturn that it grew to any great extent. Electricity demand grew in all sectors in 2015 with industry and the services sectors both experiencing growth in electricity demand of 4.8%. The residential sector's electricity use increased by 2.3% in 2015.

Reliance on imported fossil fuels is no longer sustainable, due to environmental concerns, increasingly volatile energy prices and declining reserves (peat and natural gas). Collectively, these factors have put Ireland in a position where the development and deployment of renewable and other domestic sources of energy is no longer desirable but imperative.

The best route to energy security is to achieve supply diversification. Increasing indigenous renewable electricity production from a variety of sources, including solar, will reduce the demand for imported fossil fuels and the associated exposure to energy geopolitics and variations in price.

Wind, hydro and bioenergy generated electricity in 2015, respectively, accounted for 21.1%, 2.5% and 1.7% of Ireland's gross electricity consumption while solar PV accounted for 0.01%.

There is a clear opportunity for solar to become a key player in Ireland's energy mix. The Government are due to announce a new support mechanism which will foster the development of a robust and sustainable solar energy sector in Ireland. In parallel with fiscal incentives, it is critical that national planning policy is aligned to ensure that the overarching planning policy is positively disposed to promoting energy from solar PV installations.

Renewable Energy Targets

Ireland has a legally binding target for renewable energy deployment under the Renewable Energy Directive (2009/28/EC), see **Figure 2.** Each end use sector has individual renewable usage targets i.e. electricity (reS-e), heat (reS-H) and transport (reS-T). Together these combine to make the total renewable share (reS) of 16%.

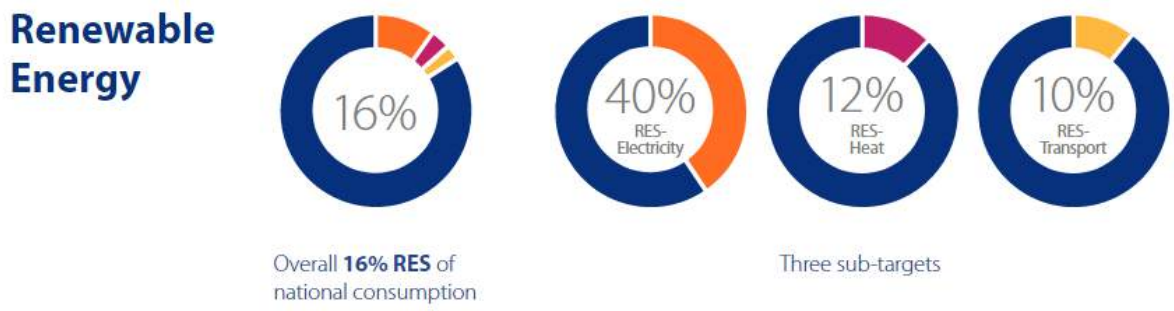

Figure 2 Ireland's Renewable Energy Targets

In 2015, Ireland was approximately 57% advanced toward the overall target, see **Figure 3**.

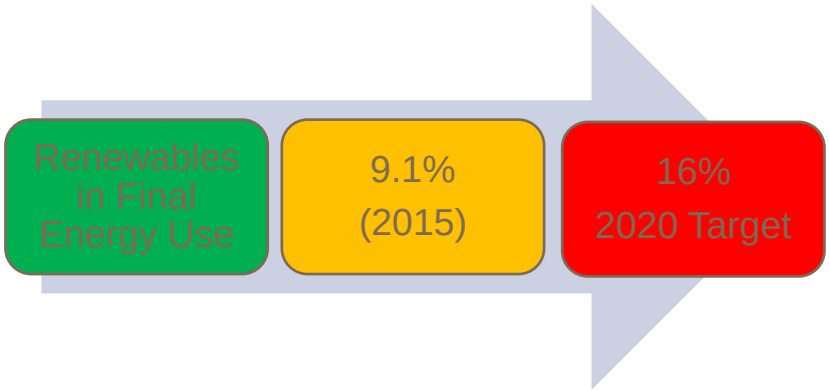

Figure 3 Progress Toward 2020 Total Renewable Energy Share

Progress toward individual targets are set out in **Table 1** below.

Sector	Target %	2015 %	Distance to Target %
Electricity	40	25.3	14.7
Heat	10	5.7	4.3
Transport	12	6.5	5.5

Table 1 Progress Toward 2020 Targets

According to European Commission forecasts released in February 2017, Ireland is amongst one of four EU countries expected to miss its binding 2020 targets. Ireland's current trajectory of renewable-energy growth means it is expected to fall half a percentage point short of its 16% target. The cost of each percentage point shortfall is in the range of €100 million to €150 million.

Eirgrid's *Generation Capacity Statement 2016-2020*, states that installed capacity of wind generation in 2016 was c.2,380 MW. Estimates of the capacity required to achieve the 2020 RES-e target varies, depending on the demand in future years, the forecast of which has increased due to the economic recovery. The current

estimate of the required wind capacity is between 3,800 MW and 4,100 MW. This means that up to 1,720MW of renewable electricity generation is required to meet our 2020 target or c.430 MW of installed capacity annually.

The risks associated with this forecast level of electricity generation capacity, include;

- The output from wind is affected by the amount of the resource wind in a year.
- The extent of outages of generating plants for reasons such as faults, maintenance and curtailment.
- Growing public opposition to wind farms and risks to securing planning permissions.

Transport accounts for one third of Ireland's energy requirement and energy related CO_2 emissions and is almost entirely dependent on oil. The energy white paper, *Ireland's Transition to a Low Carbon Energy Future* references an ambition to have 50,000 electric vehicles (EVs) within the national vehicle fleet by 2020. Sales of pure plug-in EVs amounted to 2,566 units in 2016, or just 1.75% of new car sales (source: SIMI). As the volume of EVs grows in the Irish market, there will be a significant rise in the contribution of renewable energy technologies in transport.

As can be seen in **Table 1**, we are just over half way to meeting the 2020 target of 10% for Res-T. Accelerating efforts to reach the Res-T target is imperative. Ireland has substantial resources of solar energy and by storing this, EVs can access indigenous sources of renewable electricity. With relatively short driving distances for most private vehicle users, increased penetration of EVs would offer the prospect of reducing energy consumption in transport, while at the same time reducing our import of fossil fuels, and providing an additional demand to balance the supply of variable renewable generation.

Conclusion

While the targets are demanding, they are achievable, but to reach them effort and investment must be focussed and diverse. Planning policy should be directed toward making best use of our most available and cheapest natural resources. An obvious example of where Ireland can maximise its effort is the realisation of the clearly large potential for solar PV where it can supply the existing and well-known generation shortage (and demand from new green data centres) on the east coast. Solar is the cheapest form of renewable electricity after onshore wind, it can be deployed quickly and without negative environmental impacts.

The forthcoming NPF will play a critical role in assisting the delivery of renewable technologies and ISEA consider that solar PV should be explicitly referenced to provide certainty for investors and developers.

Economic Contribution

Considering the potential impacts of the Brexit decision and the emerging vulnerable situation surrounding US multi nationals located here; Ireland must develop solutions to ensure that it maintains its attractiveness as a place to do business. A secure, sustainable and competitive energy sector is central to Ireland's economic growth both in terms of the State's ability to attract and retain Foreign Direct Investment and sustain Irish enterprise. Energy security concerns can emerge as more consumers require ever more energy resources.

The areas of Ireland with the most solar resource are along its southern and eastern coasts, close to Ireland's main sources of electricity demand, which will provide for a more efficient use of Ireland's transmission and distribution networks and remove the need for major reinforcements.

A Brighter Future (KPMG, 2014)

In 2014, ISEA commissioned KPMG to look at the potential benefits of a solar industry in Ireland. The report, *A Brighter Future*, considers that the deployment of solar PV would create €2 billion in gross value added to

the economy, €0.8 billion in tax revenues and the industry would sustain 7,300 jobs annually or between 4.5 and 13 direct jobs per MW (ground mounted and rooftop respectively) associated with the development, construction, installation and maintenance of solar PV modules. Overall, for each €1 of policy support, a solar industry in Ireland will deliver €3 of Gross Value Added to the economy over the 2017-2030 period.

Interestingly, KPMGs analysis is based on conservative assumptions, that the status quo, of no significant domestic production, is maintained. It does not factor in any employment generated by firms in the supply chain. However, the report does acknowledge that if a solar industry developed in Ireland, there would be a larger product market for potential suppliers and this could increase the number of jobs associated with the sector.

Linking Renewable Energy to Rural Development (OECD, 2012)

In most countries, governments have invested substantial amounts of public money to support renewable energy but what are the economic impacts of these policies and investments and can renewables really help to develop rural economies?

The OECD report presents the results of a two-year study of the impact of RE on rural development and draws on case studies in 16 regions across Europe and North America. It found that while RE represents an opportunity for stimulating economic growth in host communities, it also requires a flexible policy framework and a long-term strategy. The report concludes that making a positive connection between RE development and local economic growth will require more coherent strategies and a place based approach to deployment.

An interesting finding of the OECD report was that some form of innovation related to renewable energy was observed in all the case studies. The presence of many actors in the RE industry enriched the *"learning fabric"* of the regions. Small and medium sized enterprises were active in finding business niches as well as clients and valuable suppliers. Even when the basic technology was imported from outside the region, local actors often adapted it to local needs and potentials.

This was found to be the case in Extremadura in Spain, a low-density region which offers a case study of a rural based area, whose economic base was rooted in agriculture. The regional government of Extremadura aligned its strategy to support industry development in renewable energy, particularly photovoltaics. Several solar plants, manufacturers and technology centres related to renewables were created, attracting national and European investments to the region and positioning Extremadura as a reference in solar energy production. Existing manufacturing activities not previously related to energy production were revived and local firms started producing metal frameworks to support solar energy installations. The regional government in Extremadura considers the deployment of renewable energy as *"an industrial revolution for the region".*

The analysis of the 16No. case studies demonstrated the effects of policy decisions on industry. When the political directions were consistent and the signals were clear, industry in general reacted positively, changing production or methods, and looking for "green" market niches in new or existing sectors. On the contrary, when the political commitment and the economic decisions shifted, the consequences were devastating, notably as the industry slowed down dramatically, jobs were lost, and new businesses and entrepreneurs suffered the effects. Long-term effects of this kind of decision making process are extremely negative as the trust is lost, the "green" economy is perceived as an obstacle, and attitudes towards change are pessimistic

Conclusion

The development of solar PV in Ireland would realise significant direct and in-direct employment opportunities and make a material contribution to the rural economy. Renewable energy generated from solar would

contribute to Ireland's desirability as a place to locate for emerging sectors (e.g. data centres), many of which (e.g. Apple and Amazon) have objectives to use 100% renewables in their operational phase.

The potential for creation of employment is particularly relevant in a rural context. A solar PV industry in Ireland would create valuable job opportunities for people in areas with few employment opportunities, although the number of direct jobs created is limited, most of the direct jobs are in operating and maintaining the installations. Some of these jobs pay high salaries and can have an important impact on long term sustainability of rural communities.

The development of a solar industry in Ireland would result in significant new sources of jobs in rural areas. A typical 5MW solar PV farm will require approximately 25 acres of land, therefore solar farms will almost always be located within the countryside. The deployment of solar PV in Ireland would provide rural host communities with a range of benefits, including:

- New revenue sources – landowners would generate an additional and stable income source through diversification of their existing business by integrating energy production into their core business.
- Once in place, solar farms allow agricultural activities to continue and give the site a **dual-usage** alongside the generation of renewable electricity. Typically, only 2% - 5% of grass sward is removed. Wide field margins, gaps between the rows of panels and area beneath the panels allow small livestock, such as sheep or chickens, to graze on the solar farm.
- Creation of valuable job opportunities for people in areas where there are otherwise limited employment opportunities. Direct jobs in construction and O&M and indirect jobs arising along the RE supply chain (manufacturing, specialised services) and by adapting existing expertise to the needs of the solar industry

The forthcoming NPF is an opportunity to ensure that a robust planning policy framework is in place to attract investment in this critical infrastructure on a large scale to create a critical mass for supporting services and in turn contribute to effective regional development and increasing the resilience of rural areas.

Environmental Benefits

Environmentally, PVs have the significant advantage of producing no pollutant emissions during the operational phase. This reduction in carbon emissions will contribute to a deceleration in the rate of climate change. Currently, wind and solar PV are the only power sector decarbonisation options deployed at a rate close to that required under long-term IEA scenarios to attain the 2°C target (IEA, 2016b). RE deployment reduces the carbon intensity of the electricity system by displacing thermal supply alternatives. This reduces emissions of CO_2 and other pollutants.

Agricultural land use exists alongside the solar farm at operational stage, indeed it is to be encouraged. Typically, developers and installers require about 2 hectares of land (5 acres) per megawatt of power. Most projects in the Irish planning system are between 5MW and 20MW. In general, the panels have no moving parts and the infrastructure typically disturbs less than 5% of the ground. The posts upon which the panels are mounted take up less than 1% of the land area. Normally only 35-45% of the field surface is over-sailed by panels. As panels are above the ground on posts, more than 95% of a field utilised for solar

farm development remains accessible for continued grazing by small livestock

Solar farms can have a positive impact on biological diversity. Although construction projects always involve disturbance of existing flora and fauna, with solar farms there is a chance to improve the quality of habitats for various plant and animal species and even to create new habitats.

A recently published study *The Effects of Solar Farms on Local Biodiversity* (2016) investigated whether solar farms in the UK lead to greater ecological diversity when compared with equivalent undeveloped sites. The research focussed on 11No. sites and four key indicators; botany, invertebrates, birds and bats, assessing both species diversity and abundance. The study concludes that solar farms can lead to an increase in the diversity and abundance of broad leaved plants, grasses, butterflies, bumblebees and birds.

The EPA state that the levels of particulate matter is of growing concern, and urban areas face potential exceedances of nitrogen dioxide limit values. Emissions from traffic are the main source of nitrogen oxides (NOx) in Ireland, along with electricity generating stations. Short-term exposure to NO_2 gas is associated with adverse respiratory effects. There are many sources of particulate matter including diesel fuelled vehicle emissions In Ireland, levels for both PM_{10} and $PM_{2.5}$ are above the WHO air quality guideline values. Bringing the PM levels down below the WHO guideline values is a challenge and will require co-operation across several sectors.

In Ireland, the number of premature deaths attributable to air pollution is estimated at 1,200 people. Energy production and use are by far the largest man-made sources of air pollutants (IEA, 2016b). The WHO has described air pollution as the 'single biggest environmental health risk'. Air quality and associated health improvements are an indirect environmental benefit associated with solar PV installations as the energy generated displaces the need for fossil fuels and associated emissions.

Roadmap

The forthcoming National Planning Framework should provide a strong and ambitious governance framework to steer investment in clean energy. The Irish Solar Energy Association respectfully request that the Department consider the roadmap presented below to ensure that solar PV is promoted within the NPF and at all tiers of the spatial planning hierarchy.

- Have a positive strategy to promote energy from renewable and low carbon sources and explicitly reference the contribution of solar PV
- Design policies to maximise renewable and low carbon energy development while ensuring that adverse impacts are addressed satisfactorily, including cumulative landscape and visual impacts.
- The identification of Energy Corridors for applicable renewable energy technologies must be commended and same must be incorporated into future revisions of Regional Guidelines, applying a top-down model. However, it is important to note that Solar PV is not an applicable technology. Solar PV is a flexible technology that can work within the existing landscape context due to its 'light touch'. This flexible and highly adaptable technology can be accommodated within small and large field patterns and the overall impacts of same are generally confined to the local context and therefore strategic zones are not appropriate in this context.

- Advocate the co-location of renewable energy technologies, in particular solar and wind which are complimentary in terms of their output and might share connections.
- Support infrastructure and explicitly reference national projects, where this would help secure the development of renewable energy sources.
- Promote flexibility in lower level plans to facilitate the uptake of variable renewables.
- Emphasise that dependence on a single renewable technology could be as sensitive as dependence on a broader regional or global market.
- Address existing or potential barriers to deployment and promote the development of solar guidelines for planning authorities under section 28 of the Planning and Development Act.
- Solar and the alternative approach regarding technologies and spatial planning context must be considered in the Strategic Environmental Assessment (SEA). The spatial alternatives that must be considered include;
    - Inclusion of Strategic Energy Zones
    - Designated solar zoned in proximity to all settlements
    - Rural diversification strategy i.e. a non-spatial response.

  Based on the above ISEA submit that a non-spatial response should be considered the most appropriate due to the technology and that the assessment and appropriateness of location should be determined based on the development of Section 28 Guidelines on the Development Management of Solar PV proposals.