IRISH PLANNING INSTITUTE
Institiúid Pleanála Na hÉireann

Low Carbon Society by 2050

Position Paper 3

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SPECIAL
SPATIAL PLANNING and ENERGY for COMMUNITIES IN ALL LANDSCAPES

Contents

About Our Position Papers

Planners have a responsibility to influence, shape, form, and plan for a new future and these Position Papers out the Institute's view on the role of planning in advancing key issues affecting the island of Ireland. The purpose of this document with the other papers in the series is to provide a clear statement on the IPI's direction for planning to promote:

- vibrant communities,
- a strong and viable economy, and
- a clean and healthy environment.

The papers will provide a consistent framework for more detailed IPI policy submissions on specific planning issues. It also provides an instructive and strategic overview on key planning issues in short accessible papers for members of the public.

Spatial planning is an area of study encompassing an immense range of diverse topics. It is neither practical nor possible to outline a policy position on all topics related to spatial planning or on all topics which professional planners are working on today. With this in mind and for ease of reference, this document outlines the Institute's position on eleven core areas of planning policy. While these areas do not constitute a comprehensive overview of all spatial planning issues, they do represent topics on which the opinion of the Institute has been frequently sought in recent years.

The eleven core areas are:

1. Resource Management
2. Settlement and Housing
3. Carbon Free Society by 2050
4. Marine Spatial Planning
5. Access
6. Planning for a Sustainable Economy
7. Fiscal Policy for Planning
8. Built and Cultural Heritage

9. Landscape and Seascape

10. Agriculture and Forestry

11. Public Engagement in Decision-Making

Our Position Papers are intended to be a living document,subject to a process of continuous review and expansion. As part of this process, it is intended that further papers on sectoral themes within spatial planning will be added to the eleven core topics set out in the document.

The purpose of this document is to inform the activities and policy approaches of the Institute and nothing in this document should be taken as indicating the views of individual members or as forming part of the code of conduct for members of the Institute.

About the Irish Planning Institute

Founded in 1975, the Irish Planning Institute is the professional body representing the majority of professional planners engaged in physical, spatial and environmental planning in Ireland and Irish planners practicing overseas.

The Irish Planning Institute's mission is to advance planning by serving, improving and promoting the planning profession for the benefit of the community and the common good.

PP3 Low Carbon Society By 2050

3.1 Introduction

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 gases (so-called greenhouse gases) in the atmosphere of the Earth. The latest report of the United Nations Intergovernmental Panel on Climate Change (IPCC), IPCC WGIII AR5, Final Draft, published in April 2014, indicates that emissions of greenhouse gases increased on average by 2.2% per annum in the period 2000-2010.

In the absence of additional measures to reduce such emissions, mean surface temperature increases, by the year 2100, will likely be between 3.7°C to 4.8°C compared to pre-industrial levels, according to the IPCC. In order to keep the rise in temperatures to below 2.0°C relative to pre-industrial levels, to avoid the worst impacts of climate change, would necessitate, in addition to improved energy efficiency, “a tripling to nearly a quadrupling of the share of zero- and low-carbon energy supply from renewables, nuclear energy and fossil energy with carbon dioxide capture and storage (CCS), or bioenergy with CCS (BECCS) by the year 2050” (IPPC WGIII AR5).

Reflecting the foregoing concerns and following on from the Kyoto Agreement, the Member States of the European Union committed, in October 2009, to achieving a low carbon society by 2050, whereby greenhouse gas (GHG) emissions would be reduced by 80-95% below 1990 levels. The more immediate EU targets are to achieve a 20% reduction in greenhouse gas emissions compared to 1990 levels by 2020 and a 40% reduction by 2030.

In order to achieve the 2050 target, nationally fossil fuels would 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 (UNFCCC) reached a landmark agreement on December 12 2015 in Paris (COP 21), 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 increase ought be kept ‘well below’ 2 degrees Celsius, and that countries should try go further, limiting warming to 1.5 degrees Celsius. The deal also includes, for the first time, requirements that all parties report regularly on their emissions

and implementation efforts and undergo international review.

3.2 Ireland's Greenhouse Gas Emissions

Under the *Effort Sharing Decision* of the EU (Decision No.406/2009/EC), in 2009 the individual Member States were allocated targets for GHG emissions (excluding the sector covered by the *Emissions Trading System* (ETS)) for the year 2020. Ireland was allocated a demanding target of reducing emissions by 20% below those of the year 2005. The EPA (2014) estimate that non-ETS sector emissions are projected to be 9% to 14% below 2005 levels by 2020 and are thus projected to fall short of the 2020 target by up to 11 percentage points.

The main sources of non-ETS GHG emissions in Ireland are agriculture, transport, industry and housing (EPA, 2014). Together these account for almost 80% of emissions, with the balance made up from industry, services and waste. In part, the difficulty in complying with emissions targets is due to the very significant level of emissions from agriculture, which is not typical of other European states.[1] However, emissions from other sectors of the economy in Ireland are also quite problematic, notably from industry, transport and, to a lesser degree, housing. On current trends, significant fines could be levied on the State in 2020, due to the shortfall in meeting targets. EU leaders have also agreed on a 2030 framework for climate and energy policies that aims to reduce greenhouse gas by 40% of 1990 levels. Ireland's individual target for 2030 will be announced in 2016.

3.3 Energy Policy

In connection with reducing GHG emissions, the EU has set targets for the production of renewable energy and improved energy efficiency for each Member State for 2020. Ireland has a target of 16% renewable energy in the overall energy mix by 2020, which is set out in the National Renewable Energy Action Plan of 2010. This is to be made up of energy from renewable sources of 10% in transport, 12% in heating and 40% in electricity. Targets for individual Member States for the year 2030 have not been set and it is not clear how the overall 27% EU-wide target for renewable electricity will be addressed.

[1] In October 2014, the European Commission indicated a willingness to look again at how the emissions from agriculture should be accounted for, which may bring some relief to Ireland.

Current indications are that Ireland may come close to its target for renewable electricity supply (22% in 2014), but fall short in respect of the renewable transport (6.6% in 2014) and, especially, in respect of renewable heat (5.2% in 2014) targets.

An important, related consideration is that of security of energy supply. Europe is heavily dependent on imported fuel, with imports coming from other markets, principally Russia, Africa and the Middle East. Ireland is particularly vulnerable, due to its excessive dependence (c.85% in 2014) on imported energy sources, including oil and gas.

In December 2015, the Department of Communications, Energy and Natural Resources published the White Paper on Energy entitled *'Ireland's Transition to a Low Carbon Energy Future, 2015-2030'*. Its objective is to guide Ireland's transition to a low carbon energy system by 2050 and to a carbon free society by 2100.

This will be achieved through the implementation of more than 90 actions including;

- Establishing a National Energy Forum to maximize and maintain consensus on policy measures required to achieve the energy transition;
- Introduction of citizen engagement measures to include support for local community participation in renewable energy projects;
- Improved domestic grant schemes and affordable financing options for energy efficiency upgrades; the introduction of a new affordable energy strategy in 2016 and strengthened building regulations;
- Introduction of a new support scheme for the development of renewable energy technologies and a new renewable heat incentive scheme; the development of a new policy framework for district heating; and a new regulatory framework for the development of geothermal energy; and
- Introduction of grants and tax relief to encourage the adoption of electric and gas vehicles and a support framework for alternative transport fuel infrastructure.

A number of the action points presented in the White Paper are directly related to the role of spatial planning in the delivery of a low carbon energy system and include;

- The integration of energy issues into local area planning,

- Publication of a Renewable Electricity Policy and Development Framework to guide the planning and development of larger-scale renewable electricity infrastructure;
- Supporting transport modal shift through better alignment of land use and transport planning and a continuation of smarter travel programmes;
- Examining the feasibility of designating large-scale storage projects as strategic energy infrastructure under planning, regulatory and policy criteria; and

Improving the experience of citizens and developers who engage with planning and permitting processes by building on the effective cross-departmental and cross-agency work initiated under the Projects of Common Interest (PCI) process. In summary, the White Paper envisages that through the implementation of the various action points, carbon intensive fuels such as peat and coal will give way to lower-carbon or renewable alternatives in the short to medium term, before fossil fuels are substantially replaced by renewable energy sources by 2050 and eliminated by 2100.

3.4 Renewable Energy

To date, about 2.5GW of renewable electricity generation capacity has been installed in Ireland (Republic), most of it being onshore wind energy, which is contributing in the region of 23% of electricity generation in the State. This is a little over half the renewable electricity target for 2020, which is 40% of our electricity to come from renewables.

The long term deployment of Ireland's abundant, diverse and indigenous resources using the technologies presented below has the potential to increase energy security, contribute to renewable energy targets, and support economic growth and jobs.

3.4.1 Wind Energy

Ireland, along with Scotland, has the best wind energy resource in Europe, which means that a unit of wind-generated electricity costs considerably less than, for example, in Germany. It is Irish Government policy to develop renewable energy, particularly wind energy, as set out in several policy documents.[2] Electricity production from wind energy

[2] National Renewable Energy Action Plan, DCENR, 2010

has increased to the point that it accounted for 6.9% of the overall 8.6% of renewable energy generated in the State in 2014.

Currently, the most financially viable renewable electricity resource in Ireland is wind energy, given existing levels of technical development and the costs of other renewables technologies. The further development of wind energy on land in Ireland has become considerably constrained by the development of large numbers of new dwellings in rural areas. An additional constraint on wind energy developments is presented by increasingly strict interpretation by the Courts of the provisions of the Habitats Directive and the EIA Directive, as seen in judicial review cases of decisions of An Bord Pleanála.

3.4.2 Bioenergy

Bioenergy is a versatile source of energy that can be used for heating, transport and power generation. It can also contribute to broader policy objectives such as waste recovery and rural development. Electricity generated from bioenergy is 100% despatchable as opposed to wind and solar which are intermittent energy sources. However, the potential of this sector in Ireland remains under exploited. Current policy is to achieve 9% of our renewable electricity from that sector by 2020. Combined Heat and Power (CHP), Anaerobic Digestion (AD) and the co-firing of biomass in peat power stations are currently price supported by a REFIT scheme. There is scope for smaller bioenergy units, at the edge of towns and villages, which could supply both electricity to the grid and heating to the district. However, such projects can encounter local opposition on environmental grounds and an unsympathetic reception by planning authorities. There is also considerable scope to develop anaerobic digestion plants to serve the planned expansion of the dairy sector subject to the introduction of an adequate price support scheme.

3.4.3 Solar Energy

To date, there has been very limited development of solar energy in Ireland. This has been due to its high cost of development and the absence of a feed-in tariff. Following the recent very substantial falls in the cost of solar photovoltaic (PV) technology, it is becoming cost competitive for electricity generation. The generation profile (daytime) of solar PV compliments wind energy (nocturnal) as a renewable electricity resource. There is a strong possibility that solar energy may play a significant role in the future, but currently its

contribution is negligible. Solar technology is one of the technologies being considered in the context of the forthcoming new support scheme for renewable electricity generation which will be available in 2016. The large scale deployment of this technology will in the short to medium term be dependent on the introduction of an adequate level of support.

3.4.4 Offshore Renewable Energy

Ireland's sea area is approximately ten times the size of its landmass and the country has one of the best offshore renewable energy resources in the world. Offshore wind energy is technically feasible, but at a multiple of c.2½ times the cost of land based wind energy. Government policy currently favours development of offshore wind energy for export markets only. Other forms of marine energy, such as wave and tidal energy are at the pre-commercial stage, although offering much potential in the long term. The Government has provided for their development in the *Offshore Renewable Energy Development Plan (OREDP).*

3.4.5 Energy Storage

One of the main disadvantages of certain forms of renewable energy is that it is not "despatchable", meaning that it cannot be readily adjusted to meet demand at any given time. Grid energy storage can mitigate some of the grid-connection challenges posed by intermittent power plants, such as renewable electricity plants powered by wind and solar, and can help to better manage the electricity system. Electrical energy is stored during times when production exceeds consumption and this is returned to the grid when production falls below consumption. Technology for the storage of electricity is limited to date, but much work is under way to improve possibilities. An existing technology is that of "*pumped storage*" similar to the ESB plant at Turlough Hill, Wicklow. From a technological perspective, battery storage is maturing and recent developments have demonstrated that barriers to battery storage can be and in many instances are being overcome. Costs are coming down, and technological progress is improving performance, but, in the longer term, it may be that a switch to electrically powered vehicles, replacing current internal combustion motor types, allied to development of smart grids, can achieve much greater energy storage levels.

3.5 Electricity Transmission Grid

Generally, each EU Member State has its own electricity market. A partial exception to this pattern is the all-island *Single Electricity Market* (SEM) for the island of Ireland. Interconnection between the grids in each part of the island of Ireland is limited. For the SEM to function properly, it is necessary to achieve greater inter-connection, such as

proposed by the North-South Interconnector project. To achieve a low carbon economy by 2050, it will be essential to reconfigure the electricity grid in Ireland, in relation to its geographic penetration and strength, but also in respect of its ability to deal with the varying loads arising from certain renewable technologies, particularly wind and solar. The development of so-called “smart grids” will facilitate micro-generation of electricity, for example by individual households using solar PV technology.

3.6 Energy Efficiency

The requirements of EU legislation in respect of energy efficiency have been transposed in various regulations, including the Buildings Regulations. It is intended to require new buildings to approach *Passive House* standards by 2016. In order to make a serious impact on emissions from buildings, a major programme of retrofitting such buildings is required. Progress to date has been inadequate on this count, notwithstanding the *Better Energy Homes* scheme. SEAI (2015) estimates a capital investment of the order of €35 billion over 35 years would be required to make the existing housing stock low carbon by 2050.

3.7 SPECIAL

Recognising these challenges and opportunities, the Irish Planning Institute was a partner in the *Spatial Planning and Energy for Communities in All Landscapes* (SPECIAL) project 2013-2016. The Town and Country Planning Association (TCPA) was the lead partner, with other partner planning associations in Sweden, Hungary, Italy, Greece, Germany and Austria. SPECIAL was funded by Intelligent Energy Europe and is an exciting partnership between eight Town Planning Associations (TPAs) across Europe. It was a three year programme with a focus on spatial planning for the deployment of local energy efficiency and renewable energy solutions.

The project been set up to help the TPAs of the partner countries meet the EU’s challenging energy and climate change targets for 2020. It met several objectives on exchanging best practice and experience; promoting integrated renewable energy strategies, and building the capacity of the partner planning associations in the planning and delivery of renewable energy solutions. Most importantly, the partners shared that learning through their professional networks and maximise the dissemination of their training to others, in a multiplier effect.

The SPECIAL project has identified that spatial planning, masterplanning and energy planning

are not always integrated, with the result that the potential for energy efficiency measures and low-carbon solutions are not fully understood or implemented.

Project outcomes include Irish and pan-European Guides on Spatial Planning and Sustainable Energy, five expert papers and an online Knowledge Pool resource.

Visit the SPECIAL website at www.special-eu.org to access the SPECIAL 'Knowledge Pool' presenting case studies and best practice examples.

3.8 The Irish Planning Institute's Position

1. The planning system, through forward planning and development management must work towards achieving a low carbon Ireland by 2050, underpinned by an integrated land-use and transportation planning system, in the interest of the common good.

2. Strong and unambiguous implementation policies in respect of achieving a low carbon society by 2050 must be set out in the forthcoming *National Planning Framework* and any subsequent regional planning policy and county development plans.

3. Energy should be a central concept within the National Planning Framework and renewable energy policy should be considered as a spatial component.

4. The *National Mitigation Plan* and the *National Adaptation Framework* should include a major land-use planning component and should be subject to strategic environmental assessment.

5. *A Framework for Sustainable Development for Ireland* which was drafted in 2011 should be finalised and implemented.

6. It is critical that the *Planning and Development Act* is reviewed to include stronger provisions to ensure consistency of development plan and regional planning policy with the low carbon society agenda, including consistency of policy in relation to the *National Mitigation Plan* and the *National Adaptation Framework*.

7. Exempted development rights, particularly those under the *Planning and Development Regulations 2001,* as amended, must be reviewed in order to protect the functioning of existing renewable energy installations on neighbouring property (e.g. to prevent undue overshadowing of existing solar panels).

8. It should also be taken into consideration that the pattern of development can have an impact on renewable energy in that a dispersed pattern of rural housing makes it more difficult to site wind turbines etc.

9. Strategic environmental assessment of current guidelines in respect of rural housing should be carried out.

10. Consideration should be given to the formulation of appropriate policy guidelines to facilitate development of renewable heat projects to serve urban settlements.

11. In order to plan for the potential growth of agricultural scale bioenergy plants and Solar PV farms, guidelines to assist planners in the decision making process should be developed using recent lessons learnt in the deployment of these technologies both in Northern Ireland and the UK.

IRISH PLANNING
INSTITUTE
Institiúid Pleanála Na hÉireann

Irish Planning Institute
Floor 3, The Courtyard
25 Great Strand Street,
Dublin 1

T: +353 (0)1 878 8630
F: +353 (0)1 878 8682
E: info@ipi.ie