



Irish Academy of Engineering

Ireland 2040 Our Plan – Issues and Choices:

Submission by the Irish Academy of Engineering

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The Irish Academy of Engineering

The Irish Academy of Engineering is an all-Ireland body, concerned with long-term issues where the engineering profession can make a unique contribution to economic, social and technological development.

Its members are Irish Engineers of distinction, drawn from a wide range of disciplines, and membership currently stands at approximately 145.

Drawing on the experience and knowledge of its distinguished members, the Academy works to facilitate communication and dialogue on engineering-related matters. It regularly publishes reports and analyses, some jointly with other learned and professional bodies.

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Section 1: Introduction

The Irish Academy of Engineering strongly supports long-term planning as the most rational way of ensuring that the range of developments required by demographic, economic and social growth over the next 20 years will be provided, in the right places and at the right time. The Academy endorses the basic argument put forward in the Issues Paper that as a society, we cannot continue with the 'business as usual' scenario, and that some hard choices will be required. Current regional growth patterns are sub-optimal, with increasing development pressures in Dublin and below-average population growth in most of our Atlantic cities. Our existing settlement and travel-to-work patterns have caused significant social, economic and environmental problems, which demand effective policy responses. Moreover, the reality of climate change is increasingly evident, and we need to factor this in moving towards a low-carbon society and in designing critical infrastructure.

The Academy welcomes this opportunity to participate in planning for Ireland up to 2040. It established a number of Working Groups comprising engineers who are working, or have worked, at senior management levels in the public and private sectors on the island of Ireland, to prepare Discussion Papers on the spatial planning and infrastructural investment issues which the National Planning Framework (NPF) will need to address. Six Discussion Papers were presented at a major conference held in Dublin Castle in May 2016, and the key findings of most relevance to the NPF are contained in a Summary Report attached to this submission. The complete Papers are available for downloading from the Academy's website <http://www.iae.ie/publications>. The Academy also arranged a conference in Cork in February 2017 to discuss the Atlantic City Regions paper; this conference was attended by representatives from the private and public sectors in Galway, Limerick, Cork and Waterford.

The purpose of this submission is to draw on those Discussion Papers, together with other relevant Academy reports, in responding to specific critical policy issues identified in the NPF consultation paper. Members of the Academy have particular expertise over many years in the design, planning and delivery of major infrastructural projects in both parts of the island, and can offer advice in relation to strategic planning for the future based on their experience. The Academy would welcome an opportunity to expand on this submission at a meeting with the NPF team, should that be considered helpful.

Section 2: Ireland's national planning challenges

The Academy fully agrees with the Issues Paper (1.1.6) that the most important question that needs to be asked at the outset of the NPF process is:

What sort of place should Ireland be in 2040 and what do we need to do to achieve this?

The Academy's vision for Ireland in 2040 is a country which has:

- Planned successfully for an increase over 2011 levels of 0.75 million+ extra inhabitants, in terms of new housing, places of work, education, health and other facilities
- Focused population growth in the Atlantic cities and larger towns, such that the Greater Dublin Area is not required to absorb an ever-increasing share of the national total, thus reducing pressure on the capital, and that those cities and larger towns become more vibrant and competitive places

- Fostered greater connectivity, both physical and digital, between our Atlantic city regions, and between those cities and their hinterlands
- Encouraged new housing to locate as close as possible to the heart of our cities and towns, while providing a range of affordable house types and sizes to meet the different needs of our population (including an increasing number of older people), thus reducing our dependence on car usage and enabling the economic provision of other infrastructure such as water supply, sewage treatment, broadband etc.
- Re-invigorated the central areas of cities and larger towns which have been adversely impacted by the economic downturn and the proliferation of out-of-town shopping centres
- Revitalised our smaller towns and villages, which have been hardest hit by population decline and loss of economic functions
- Protected our environmental resources and biodiversity (especially our water resources) and implemented comprehensive climate change policies
- Reduced our reliance on imported energy supply
- Developed an all-island approach to spatial planning, such as the Dublin-Belfast economic corridor, to enable the Island to compete on an international scale with similar sized conurbations
- Established more effective ways of prioritising and delivering national infrastructural projects.

The Academy considers that there are a number of essential game-changers that will set the NPF apart from previous similar processes:

- Effective implementation at regional and local level of national planning policies, articulated in both the NPF and the new Regional Spatial and Economic Strategies (RSEs), which prioritise development of Gateway city regions and which require more sustainable settlement patterns within those city regions.
- Supported and enabled by appropriate legislation.
- Neither the NPF or the RSEs will succeed unless they are accompanied by national and regional infrastructural investment plans which ensure that adequate funding is maintained over the medium- to long-term for projects which necessarily involve long lead-in and delivery times.
- Sustainable transport and broadband are critical investment priorities in enabling connectivity and competitiveness, for both FDI and indigenous enterprises. Both transport links and broadband can also help cities to drive economic and social development within their regions.
- National leadership is essential to ensure allocation of the required resources and that counter-productive interference does not hinder full and sustained implementation of the NPF over the long term.
- Local leadership from both the public and private sectors is vital within city regions – improved governance should come through directly elected regional authorities and city mayors, and through more autonomous local funding.
- North-south collaboration is even more important post-Brexit.

These will be elaborated on in more detail below.

Section 3: People's health and well-being

The Issues and Choices paper has presented a clear but stark picture of the settlement pattern which has emerged over recent decades, notwithstanding the objectives of the former National Spatial Strategy (NSS). In particular, more than 60% of all national population growth occurred in areas accessible to the Dublin, Cork and Galway hinterlands, but not in the cities themselves. The trend has been towards an overall pattern of suburbanisation, that may be described as 'sprawl' (para. 2.2.4). This has resulted in people travelling longer distances, often by car, which has contributed to car dependence and traffic congestion as well as wasteful time and energy spent commuting (para. 2.3.1). It is striking that not one of the twenty-two fastest growing towns in Ireland between 2002 and 2016 was an NSS gateway or hub settlement (para. 2.4.4). The consequences of some of the lifestyle choices that we are accustomed to are impacting on our own personal health and wellbeing as well as the overall health and wellbeing of places throughout Ireland (para. 3.1.3).

Sustainable transport investment improves the environment and reduces pollution by encouraging a modal shift to public transport, through facilitating higher density development, walking, cycling, and low-emission vehicles.

Widespread availability of high speed broadband contributes significantly to people's health and wellbeing by facilitating working from home, reducing commuting and increasing 'family available time'; increases the third level options available to young people; connects families and especially older people with friends and the wider community both at home and abroad; and provides a diversity of entertainment, information and education options for people not otherwise available to them in their local community.

The Academy proposes an effective policy response which would create more sustainable and healthier outcomes for individuals and for society as a whole:

- The provision of a range of affordable housing closer to where the majority of jobs are located, i.e. within larger cities and towns
- Increased urban densities which make public transport services viable, coupled with investment in public transport infrastructure, and in cycling and walking routes
- Extending high-speed broadband to dispersed communities, enabling at least some workers to work from home on either a full- or part-time basis, and generating new business opportunities for SMEs.

Section 4: More balanced regional development

Research carried out by the Academy, particularly in relation to the Atlantic City Regions, supports the analysis set out in chapters 2 and 4 of the Issues and Choices paper. In short, population growth in the Cork built-up area (28,300 or 16%), Limerick (15,600 or 20%) and Waterford (8,800 or 20%) has been significantly below the national average over the past 20 years, despite recent increases apparent in these three cities and particularly in Cork, since 2011 (para. 4.1.10). On the other hand, current trends would indicate that the Greater Dublin Area (GDA) will further increase its share of the national population over the next 20 years (CSO Regional Population Projections 2016-2031). The Issues Paper itself acknowledges that Dublin is under strain, and the Academy therefore strongly supports the argument set out at para. 4.1.12 of the consultation paper:

'Given the scale and important regional roles played by the four [Atlantic] cities, all have significant potential to complement Dublin, to absorb some of the strain that the Capital has been subject to in terms of accommodating growth in employment, housing need and infrastructural requirements and drive their wider regions, which may also require cities to work in collaboration with each other and/or in conjunction with other towns, to borrow and share strengths.'

It is important to emphasise that the Academy wishes to see Dublin flourish economically, and to accommodate its natural population increase; what it does not want is that the Greater Dublin Area should continue to absorb a growing share of the national population. This will involve a twin-track approach:

- 1) As indicated in our paper on the Dublin-Belfast economic corridor, the corridor has a population of almost half the total population of the island, and has a population density five times greater than the rest of the island. This gives it the potential to compete with larger urban zones such as Hamburg, Manchester and Milan, which rank in the top ten urban zones in Europe, and will make it a magnet for larger-scale inward investment projects that would otherwise not come to the island. The enhanced development of the Dublin-Belfast economic corridor will enable each urban centre along the corridor to benefit from enhanced economies of scale; increased economic growth and employment; more contiguous customers for indigenous industry; and more inward investment. But, to optimise its potential, it will also require better broadband, transport, energy, waste and water infrastructure, as well as enhanced education, research and health services.
- 2) The Academy considers that the NPF needs to contain specific pro-active measures to promote the Atlantic City Regions to ensure more balanced regional development. There is an increasing consensus among public policy makers, shared by the Academy, that cities play a critical role in driving economic development and innovation, especially in terms of the knowledge economy. However, given the relatively small scale of Irish cities by European standards, the Academy considers that the best way to achieve more balanced regional development is to establish an increasingly connected network of co-operating and complementary city regions¹. The issue therefore is how connectivity both within and between the Atlantic city regions could be improved; transport infrastructure and broadband play a key role not only in facilitating such connectivity, but also in improving the competitiveness of our city regions.

The Academy welcomes the analysis of the structure of Irish cities in section 4.1 of the Issues and Choices paper, and particularly the recognition of the fact that Ireland is characterised by very strong growth of Dublin and an absence of comparative growth in any other urban centre. A key difference between Ireland and the selected other small developed countries and our nearest neighbour the UK, is the comparative weakness of the 'next tier' of cities and their associated regions². It is proposed that the RSEs should include an audit of the key assets in the Atlantic City regions which could provide the building-blocks of regional development strategies.

¹ The Discussion Paper on the Atlantic City Regions cited the UK's Northern Powerhouse as an example of such co-operation and connectivity between cities. The Academy welcomes the recognition of this example in the Issues and Choices paper (para. 4.1.13).

² This issue was the subject of a presentation by Dr William Brady at the Academy's conference in Cork in February 2017: some of the main points from his presentation are summarised in Appendix A, below.



One of the game-changers listed above is local initiative and leadership. While the role of the Atlantic Cities should be clearly flagged in the NPF, each city region should be responsible for identifying its own development priorities, supported by updated metropolitan-wide land use and transport planning strategies. City regions should also identify areas of potential co-operation with adjacent regions which would optimise overall economic and social growth, reduce costs and improve service outcomes. It is important that each city should have an autonomous source of funding which will ensure that local priority projects will be implemented in line with those strategies. The Academy also recommends that regional assemblies and city mayors should be directly elected, so that regional and metropolitan policies and plans have broad democratic support and are driven by local democratic processes.

The Academy acknowledges that there are no comparable cities in the State north of a line from Dublin to Galway, but there are many county towns which should be re-invigorated and which are capable of providing a sub-regional role. The RSEs should examine the potential strengths and assets of each of these towns, and devise developmental strategies accordingly, including cross-border collaboration where appropriate.

Section 5: Sustainability – Climate change and energy

The Academy endorses the argument set out at para. 5.2.6 of the Issues and Choices paper:

If Ireland is to make up for lost ground in relation to carbon reduction targets and move towards the objective of a low carbon and climate resilient Ireland by 2050, it is necessary to make choices about how we plan for future growth. A key role for the National Planning Framework will be to assist in reinforcing the structural changes required to transition to a low carbon sustainable economy and society.

The Academy wishes to comment in relation to both climate and energy policies over the period to 2040.

Climate change adaptation:

The impact of climate change, with increased rainfall intensity and frequency at times of the year and potential drought at others; sea level rise; more severe storms; increase in wave height and storm surges, poses potential significant risks for all of the essential services on which our modern society depends. Critical infrastructure such as water supply, sewage treatment, electricity and gas supply, communications services, transport, health and education facilities, are all at risk if we do not adapt to the reality which is climate change.

Now that the national climate change framework and legislation are in place, there is need to focus on implementation. The cost of delay in terms of risks to critical infrastructure, essential services and private property continues to increase, and the sooner the adaptation challenge is addressed head on the better. Climate change adaptation needs to be built into every aspect of the National Planning Framework and into national and regional infrastructure plans.



Energy supply:

The Academy is concerned about Ireland's over-reliance on limited sources of imported energy supply, particularly in a post-Brexit context where the UK will no longer be bound by EU energy directives.

Ireland has for some years been importing over 90% of its natural gas requirements through Britain. The Corrib field will initially supply approximately 50% of the island's needs. Within 3 or 4 years this will decline to less than 20% and if there are no further finds, the island will once more be hugely dependent on imports via the UK.

Greater security and competitiveness of energy supply is important for the future of the economy and society. The Academy therefore recommends specifically that

- a) An electricity inter-connector to France should be constructed; and
- b) Ireland should develop its own liquid natural gas (LNG) terminal. The proposed Shannon LNG Terminal at Ballylongford would be a positive development given Ireland's position at the end of the European Gas Grid, the decline in North Sea production and the limited lifespan of the Corrib gas field.

Section 6: Planning, funding and delivery of nationally-important infrastructure

Based on plausible demographic projections to 2040, the scale of population growth is clear, as is the demand for at least 500,000 new homes. There will be a concomitant need for new places of work, education, health, shopping, etc. If the NPF follows through on the policy guidance in the consultation paper, we also know that the majority of new population growth should be accommodated in our five major cities. We therefore are well-placed to plan the infrastructure which will underpin the required quantum and location of new development over the next 20 years. We equally know that most major infrastructural projects (such as an additional water supply for Dublin, or new electricity inter-connectors) take many years to go through the design, public consultation and option selection, planning, procurement and construction phases, so the challenge is firstly to identify those projects, and then to prioritise and fund them (over their design-to-completion lifetime). The NPF should facilitate timely and cost effective delivery of major infrastructure by promoting early action on relevant land zoning, outline design, route selection, environmental impact assessments, public consultation, planning applications and land acquisition, prior to final decisions to proceed with and commit significant funding to particular projects.

The Academy recommends that the following be considered as nationally-important infrastructural projects within the context of the NPF and the RSEs:

Roads:

- M20 Cork – Limerick Motorway
- Upgrading of N25 Cork – Waterford and N24 Limerick – Waterford roads to remove blockages and improve journey times
- Galway City Ring Road project
- M28 Cork – Ringaskiddy Port: This project now is a higher priority post Brexit decision with Cork Port having direct access to European markets in France etc.
- M7 upgrade to three lanes from Naas to M9 junction

- Implement a range of congestion relief projects for the M50³

Note: With the use of autonomous cars gaining momentum over the next decade, the quality of our road network will play a key role in the efficient use of this mode of transport.

Rail:

- Metro North
- Improving journey times on radial routes out of Dublin including the Dublin – Belfast line with electrification of the routes planned over time to tie in with renewal of fleet etc.

Airports:

- Construction of 2nd runway at Dublin Airport and increased terminal capacity to accommodate the projected growth in passenger traffic

Water:

- Shannon – Dublin water supply project with the potential to connect with a further pipeline from Lough Neagh to Dublin to improve security of water supply on the wider Dublin-Belfast Economic Corridor.

Power:

- Electricity interconnector to France : Direct connectivity with mainland Europe post Brexit will be strategically important for Ireland.

Gas:

- LNG Import Terminal connected to the Natural Gas Grid – again strategically important post Brexit.

Broadband:

- Urgent implementation of the Government's National Broadband Plan.

The Academy shares the conclusion set out at para. 6.1.6 of the consultation paper:

It has been a particular issue that the relationship between infrastructure and land-use in Ireland is such that the spatial pattern of development has served to reinforce the predominant status quo. This is largely because infrastructural investment has followed development and population, in the context of constrained public expenditure and a market-driven, development-led environment.

It is for this reason that the Academy attaches so much importance to the need for an Infrastructural Investment Plan to accompany the NPF; otherwise, there is a real risk that essential projects will be delayed, or not provided at all. The Investment Plan should:

- Be co-ordinated with the infrastructure priorities of the NPF and the RSEs, and the Capital Investment Plan;
- Provide for multi-annual funding of such projects, to give certainty that they will proceed once development consent has been granted. Some of the funding should be ring-fenced for inter-city regional projects; and
- Be reviewed and updated annually in a report to the Oireachtas.

The Academy recognises the need to achieve agreement and alignment of policies in a number of Departments to ensure cohesive application of the NPF. It therefore further recommends the establishment of a National Infrastructure Commission which would bring together all the current infrastructure providers. The purpose of the Commission is not to duplicate the work of such providers, but to prioritise and co-ordinate major projects, to monitor implementation, and

³ As detailed in the Academy's 2016 report, *Sustainable Transport Infrastructure 2035* (<http://www.iae.ie/publications>)



to share relevant expertise (such as procurement procedures). A key role would be to ensure consistency between the infrastructural investment plan and the NPF and RSEs.

Section 7: Successful implementation of the National Planning Framework

The NPF and the NSS share many high-level spatial development goals. However, as the Issues and Choices paper accepts, it is important to learn from the experience of the NSS, and especially from its relatively weak level of implementation.

The Academy has identified the following barriers to successful implementation of the NSS:

- Lack of political leadership support at national level, and counter-productive political interference at national, regional and local levels
- Insufficient resources committed to infrastructure development
- Lack of leadership from Regional Authorities which were too numerous and lacking in resources
- Absence of robust monitoring of implementation.

As a starting point, the Academy believes that implementation of the NPF should be across all Departments and State agencies, and it would therefore be appropriate that implementation should be led by, and have the authority of, the Taoiseach of the day. This could be done by means of a Cabinet sub-committee, supported by a high-level group at Assistant Secretary level, which would receive regular progress reports. In this regard, it is important that NPF targets should be set at the outset, particularly in relation to (i) population and employment growth in each of the city regions; and (ii) oversight of major infrastructural projects. Day-to-day supervision of implementation should be assigned to the Minister for Housing, Planning, Community and Local Government and to the three Regional Assemblies.

In section 4 above, the importance of initiative and leadership at regional and local level was highlighted, particularly in relation to the five cities as drivers of their regional economies.

While NPF governance is essential, it is not sufficient. The Academy's central argument is that the development required to support population growth will not happen, or at least not happen in time, without adequate funding and political leadership. Given the long lead-in time for major projects, these need to be prioritised from the outset and certainty created in relation to their delivery. As the Exchequer is the primary source of capital funding, the State can exercise considerable influence over the location and timing of such infrastructure, and thus facilitate development in accordance with NPF spatial priorities. Given the significant costs to the exchequer, other methodologies for delivery of infrastructure projects such as PPPs, may in the present economic climate prove viable and will need to be examined by the NTMA, to ensure timely construction of the required infrastructure and its importance for the growth of the economy.

Finally, achieving the maximum possible level of ongoing political support for the NPF and for Regional Spatial and Economic Strategies (RSEs) will be a fundamental key success factor in ensuring optimum implementation over the long term.

Appendix A:

Key points from Dr William Brady's presentation 'Ireland's second-tier city regions' to the Academy's conference on the NPF: Opportunities for the Atlantic City Regions? Cork, Feb. 2017

- Second-tier cities may be defined as cities outside the capital whose economic and social performance is sufficiently important to affect the potential performance of the national economy.
- City regions tend to be more reflective of everyday economic and social realities than administrative cities / regions / counties.
- Cities compete with cities. City governance therefore matters, because it reflects the way in which cities react to the challenges of globalisation. Governance often includes place-based strategies aimed at securing urban success in a fragmented and complex economic and political arena.
- 80% of Europe's urban population live in the 124 second-tier cities. While 23% of Europe's GDP is generated in capital cities, 33% is generated in second-tier cities.
- 'Successful capitals are crucially important to their national economies, but the risk is that they dominate the rest of the urban system so that the national economy becomes spatially and structurally unbalanced.' [John Moores University / ESPON, *'Second Tier Cities in Europe: In an Age of Austerity Why Invest Beyond the Capitals?'* 2012]
- Over-investment in capital cities and under-investment in second-tier cities leads to economic under-performance. Capital city dominance increases regional inequality within countries.
- Countries which de-concentrate investment and resources and decentralise powers and responsibilities have more high-performing cities and better national economic performance.
- Local authorities and city regions need powers.
- The National Planning Framework offers the only real prospect of achieving more balanced territorial development. Rural policy won't address regional development – there is a need for a strong urban hierarchy.
- Connected Atlantic City Regions provide a strong alternative spatial development model using cities as anchors.
- International examples of inter-urban co-operation (albeit at different scales) include the Northern Powerhouse in the UK and the Randstad in the Netherlands.