Colm Murray
[redacted]

31st March 2017

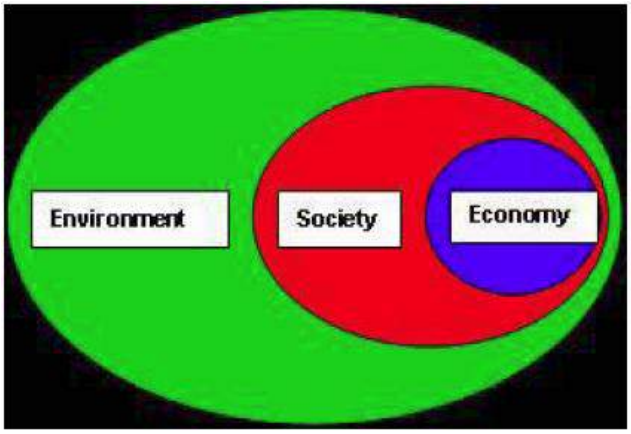
National Planning Framework and ecologically sustainable development

Dear Sir / Madam,

I wish to submit a copy of a dissertation I wrote in 2009 for a planning course for consideration in the development of land use policy for the emerging *National Planning Framework*. It is entitled *'The role of spatial planning in achieving ecologically sustainable development'* asks what can the land use planning system do to make 'development' 'sustainable'. This is the most fundamental aim of the Planning Act, written into the title, '*to provide, in the interests of the common good, for … sustainable development'*. I fear that this is not being given adequate attention. I abstract the main points in the following letter.

The Framework for Sustainable Development in Ireland states*:*

> *'Government policies on regional development, spatial planning and sustainable communities, including the* National Spatial Strategy 2002-2020 *(NSS), the* Housing Policy Framework*, the* Planning and Development (Amendment) Act 2010 *and* Regional Planning Guidelines 2010-2022 *(RPGs) recognise that, despite progress in recent years, Ireland needs to make further progress in the integration of sustainable development considerations into planning approaches.'* (Our Sustainable Future, 2012, p. 65)



A conceptualisation of the relationship between the three 'dimensions' or 'pillars' of 'Sustainable Development'. This diagram is intuitively more correct than the 'three-legged stool' concept, and it highlights the fundamental or all-embracing context given by the environment (Byrne O'Cleirigh, 2007)

For it to mean anything at all, 'sustainable development' ought to be understood as 'environmentally sustainable development'. This point is eloquently made in this diagram, from a report by Byrne O'Cleirigh for Comhar, The Sustainable Development Council.

The balancing of environmental, social and economic factors in achieving 'Sustainable Development' called for by Bruntland – the three-legged stool model - does not take account of the location of the economy within society, and society within the environment. The 'environment' is an all-pervasive domain in which human behaviour generally, in which production, trade and interchange take place. The effects of human activity on the ecological space we occupy should take paramount position in our planning. This is relevant in a world where climate change is a reality we are not adequately grappling with, either in terms of mitigation or adaptation.

This submission is based on my 2009 essay, and subsequent developments, and is structured around the following topics:

a) Five key strategic objectives of a National Planning Framework
b) The importance of Strategic Environmental Assessment
c) The importance of generating viable alternative planning policy strategies
d) Use indicators of environmental performance to shape future planning policy
e) National Climate Change Adaptation Strategy
f) Land Use and Transportation Planning
g) Making use of existing built resources – the Government should have an Urban Policy
h) Energy use reduction and rural and urban Housing
i) Balanced regional development
j) It is a contradiction in terms to talk of sustainable growth
k) Who has got it right?

Colm Murray, B. Arch, M.A. (Planning), MUBC

a What should be the key 'National' 'Spatial' 'Strategic' objectives of a 'National Planning Framework?

The Expert Group which reviewed the National Spatial Strategy observed that a new national plan must be national in focus, confine itself to land use planning matters, and seek to materially influence policy in a few of the most important policy areas – that it must be 'strategic'. Many of Ireland's current environmental woes, along with social and economic ones, have been refracted through decisions made in the planning process, particularly in relation to

- The erosion of biodiversity through the loss of habitat,
- The under-utilisation of existing buildings (and towns), which are environmental resources if their re-use displaces the building of a new building,
- Unsustainable patterns of rural housing and travel to work times and distances, exacerbated by transport policy, and land ownership privileges and land use policy which combine to prevent the development of alternatives,
- The imbalance between over-intensification of development in the East of Ireland, centred on Dublin, and the neglect of the potential of existing resources in the West of Ireland, and
- the over-development of housing until 2008, and its subsequent neglect in the intervening period.

These five key issues, in my opinion, should be taken as the 'key policies and decisions that it seeks to influence', called for in the '*Review of the National Spatial Strategy: Views of the Expert Group'* (Jan 2014).

b The importance of Strategic Environmental Assessment

The 2010 OECD *'Environmental Performance Review – Ireland'* report makes comments and references to the need to improve spatial planning practice at least 6 times, including to improved consideration of biodiversity in Strategic Environmental Assessment. The emphasis on environmental risk assessment is also called for in the NPF's *Strategic Environmental Assessment Scoping Report:*

> *'Strategic Environmental Assessment is a process for evaluating, at the earliest appropriate stage, the* **environmental** *consequences of implementing plan / programme'* (para. 1.1, p. 3, emphasis added)

> *'The purpose is to ensure that the environmental consequences of plans and programmes are assessed both during their preparation and prior to adoption.'* (para. 3.1, p. 7)

The importance of carrying out a thorough Strategic Environmental Assessment of this new national plan cannot be overestimated, as it will provide an umbrella or framework for all subsequent land use plans and programmes. I recommend that the *SEA for the National Planning Framework*

a) include a section which reflects past performance and enhanced policy objectives for this critical realm of public policy. It is crucial, before the new National Planning Framework is adopted, that the Government reflect on, and learn from, the mistakes of the 2002 National Spatial Strategy. SEA, if applied iteratively to successive similar plans or programmes, should demand that policy be improved in terms of its beneficial effects on the environment. My dissertation provides a brief outline reviews the *National Spatial Strategy 2002 – 2020* from the point-of-view of environmental performance, an operation which is critical to the improvement of policy (pp. 21-6).

b) Contain well-defined, cogent and differentiated national strategic planning policy options for comparative purposes, to generate the alternative scenarios necessary for considered policy choices to be made. This is required by the SEA Directive. An example, which could easily be co-opted for this purpose, is the Futures Academy's 2008 report *'Twice the size? Imagineering the future of Irish gateways'* (this point is elaborated below).

The SEA of this national plan will be a flagship for the process in Ireland, and perhaps also in Europe. For this reason, it is important that the SEA Report represents the original intentions of the Directive, and focusses on improving the environmental performance of previous plans and setting out better objectives for the new one. I recommend that the SEA Environmental Report be put to the Dáil prior to the completed NPF, and that the discussion by the political decision-making assembly be initially framed around its environmental objectives. I explore the importance of SEA in Chapter 6 (pp.44-48) of my thesis.

c The importance of generating viable alternative planning policy strategies

A Dublin planning and 'futures-thinking' research group called 'The Futures Academy' (2008) critiqued the assumption that re-balancing regional development could be a realizable aim of the NSS. It generated a set of three scenarios or spatial models of Ireland in the future, capturing and exaggerating essences of characteristics that are observable now, and extrapolating their trajectories.

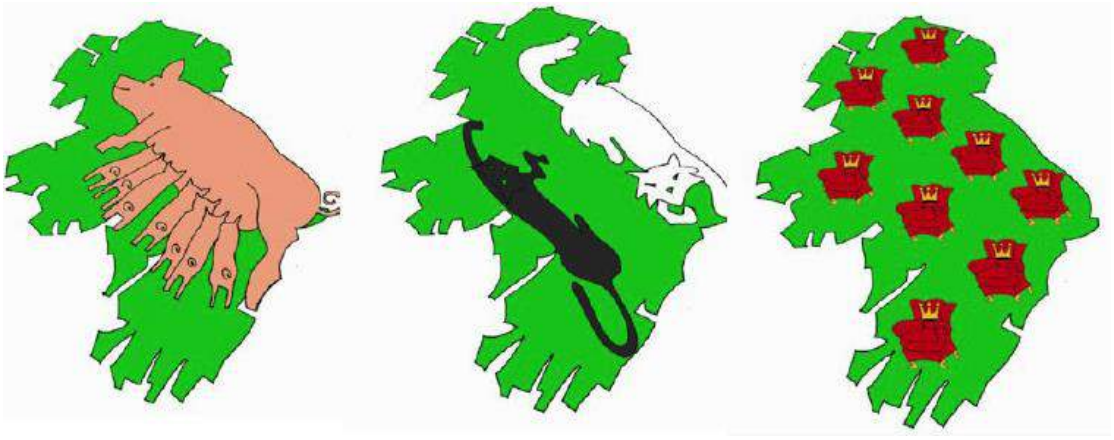


Figure 7: 'Twice the size? Imagineering the future of Irish gateways, *The Futures Academy (2008) has already generated a set of three alternative spatial models of Ireland in the future, entitled (i) 'The Sow of Liberty', (ii) 'Wild Cats of Equality', and (iii) 'The Fragility of Mé Féin'*

'The Sow of Liberty' represents a globalised, individualized, liberalized, regionalized world, from which the eastern region of Ireland profits, whilst the other city regions specialize in niche technology and heritage industries. In the diagram, the dependency of the regions on an economically-dominant Dublin and an eastern corridor is represented by a sow with her litter.

'The Wild Cats of Equality' represents the uneasy negotiation of approximately fair distributions of resources at international, European and national levels. Within the national space, this is diagrammed and polarized into the knowledge society of the towns and cities and the wisdom society of rural areas. In this scenario, an urban region of comparable economic weight to Dublin is developed along the 'Atlantic Corrido' from Cork to Sligo.

'The Fragility of Mé Féin' represents a regression to individualist values and patriotism, within a closed national space, with social institutions developing like the American social model. This model is represented by urban sprawl, with individual urban centres in competition with each other to attract investment.

The study presents considered alternatives to the NSS spatial model, and this should be used in a 2017 SEA. The study's authors asserts that *'the central tenet of present planning in Ireland – the attainment of balanced regional development – is mistaken'.* This, it says, is due to the inevitable flow of population eastwards, the ongoing structural changes in agriculture, personal values and politics. It questions whether conventional national-scale planning can comprehend these trends and adequately anticipate and provide for them. In their opinion, planning policy and implementation is too weak to achieve this. *'At a fundamental level lies the very real possibility that at a grand scale we are planning for a future that will never happen.'* (The Futures Academy, 2008, p.7). Discounting the superficial tautology, it is strong criticism indeed of the whole concept of national 'spatial planning', and ought to be seriously considered.

d Use indicators of environmental performance to shape future planning policy

Policy formulation should use available data sets to review environmental performance and make new policy that has its aim to improve environmental performance as an overriding requirement. Whilst there is a commitment in *'Our Sustainable Future: Framework for Sustainable Development for Ireland'* (Government, 2012, p.15, p.23) to develop indicators, and to use these indicators to monitor the trajectory of our development reflexively, the failure to develop these must be one of the most egregious failures of public policy of the last twenty years. My dissertation highlights the importance of the collection of indicators, required by the Strategic Environmental Assessment Directive, and points out how this statutory process should progressively improve the environmental performance of planning policy.

Reflecting on some criticisms that have been levelled at the profession of planning, Meadowcroft observed:

> *'*[Frederick] *Hayek's perspective suggests at least two things. First, it implies that ambitious efforts at comprehensive social re-design are highly problematic: social complexity and unintended consequences make the likelihood of 'success' minimal. … It suggests reform efforts should be focussed on clearly identified and circumscribed problem areas.'* (Meadowcroft, 1999, p.28)

In other words, that which is measurable and achievable should become our aims. Headline indicators (preferably a single one to match GDP) are needed to express in the simplest possible terms Ireland's sustainability performance. And sectoral indicators and targets are also needed to ensure that responsibility is clear at each level and in each policy area.

> *'At regional and local level, the complexity of governance increases, while the policy instruments available to achieve objectives are few and poorly understood. … The intellectual framework for analysing and assessing land-use choices is weak' (Convery, et al., 2006).*

Convery *et al.* consider that, whilst macro-economic theory and policy analysis are competent, *'there is no comparable, well-recognised body of theory and practice informing the shaping of land use and its implications for well being'* (Convery, *et al.,* 2006). In this regard, Irish governmental policy in the period up to 2014 would have failed a putative test even for 'economic sustainability', and the failure should be attributed to a lack of response from the planning system.

Considered from a utilitarian point-of-view, SEA, by explicitly referring to long-term impacts, directly challenges the predictive capacity of the current analytical methodologies used in the

development plan cycle. As the process gets repeated *ad infinitum*, and as indicator sets are bedded down and tracked over the time span of more than one plan, it is likely to extend the time horizons of strategic planning. This concern for the future, it might be expected, will prompt spatial planning policy to converge with 'Sustainable Development'.

Strategic Environmental Assessment is a significant tool for achieving 'Sustainable Development' and, indeed, ecologically sustainable development (Desmond, 2007). But its contribution is best made when it focuses only on what it is set up to do – to consider the environmental effects. Where SEA is subsumed into 'Sustainability Appraisal', as in the UK, there is a dilution of its environmental focus as social or economic foresight are also taken into account. It may also happen if the Environmental Report, or the public consultation stages of the SEA process, permit excessive discussion of non-environmental issues. This is clear from the Dublin Docklands Development Authority SEA reports of both 2003 and 2008. If employed correctly, SEA should counterbalance the anthropocentric bias built into conventional planning practice and, in particular, Sustainability Assessment.

e National Climate Change Adaptation Strategy

Climate change and its implications is one of the most important issues facing the world, Irish society and the Irish economy. Climate change adaptation is most cogently addressed in the land use planning system, as coastal and fluvial flooding, and extreme weather events, alter the way we use the national space. Unfortunately, sectoral adaptation plans have progressed only slowly since the publication of the 2012 *National Climate Change Adaptation Framework,* and this is a problem for the National Planning Framework, as sectoral measures cannot yet be integrated into the national picture. It is important that the holistic view is achieved, particularly if 'maladaptation' is to be avoided. This is quintessentially a job that the land use planning system can do. The NPF should anticipate policy irruptions from these sectoral strategies into its policy arena. Species, and the habitat landscapes they depend on, may have to be given room to migrate. We may have to face up to the abandonment of certain forms of development, for example, coastal golf links in machair sand dunes.

f Land Use and Transportation Planning

According to the OECD's October 2009 review *Environmental Performance of Ireland*:

> *'The National Sustainable Development Strategy has lost momentum; progress on implementation has not been constantly monitored. There is a need to integrate further environmental concerns into sectoral policies and practices,*

particularly in land use planning …. Transport trends are of concern' (OECD, 2009).

Thus it recommends that Ireland *'finalise the revision of the National Sustainable Development Strategy, make it fully operational with the introduction of targets, indicators and monitoring mechanisms, and assure consistency between it and existing sectoral policy frameworks'.* [The absence of] *'Property and land taxation, combined with land use planning procedures that are not integrated with investment in public transport infrastructure, have led to considerable urban sprawl and growing reliance on cars in urban and, increasingly, rural areas'.* (OECD, 2009), and recommends that Ireland should *'develop measures to better link land use and transport planning with a view to controlling urban sprawl*'.

Teagasc's 2014 Rural Economic Development Zones (Travel to Work Areas) provide an important basis for understanding and re-thinking our economy, labour market and commuting (map reproduced at the end of this document). There are many well-publicised maps which show the origins of commuters for urban centres. This is the evidence of the way transportation needs and land use interacts. These diagrams are symptoms of the failure of the land and housing market to provide rational and local solutions to people's housing needs. The difficulties of the housing markets are well understood (see Norris and Byrne, 2015). Whilst it is outside the scope of the National Planning Framework, legal and fiscal instruments to make land affordable and available to build upon to provide housing where it is needed in a fluid and affordable housing market will be key to a more sustainable society, and will have an impact on the planning system.

Within the planning system, everything possible should be done to structure and facilitate investment in public transport, cycling and walking modes and not roads. This entails focussed land use and transportation studies for the larger work centres.

g Making use of existing built resources – the Government should have an Urban Policy

Following from a commitment to reduce transport impacts, especially emissions resulting from commuting, the livability of our towns and urban areas as the alternative to rural housing is a priority. The Heritage Council's 2015 *Policy Proposals for Ireland's Towns,* (copy enclosed) observes that Ireland should have an Urban Policy, that is, a government level statement of what role towns play in the life of the nation. This would inform planning policy, but also social policy and locational and investment decisions in relation to public services. It should outline what the cultural objectives are for towns, their importance in a model of what sustainable development means, the health benefits of nearby services for individuals, etc. Because the rationale for this cuts across all policy areas and all Government departments, a statement of objectives for towns should overarch and give direction to the National Planning Policy.

As a starting point, the Heritage Council suggest that an urban policy could:

i. **Recognise** and acknowledge the **social, cultural, economic and environmental value of Irish towns**, emphasising in particular, their role in achieving 'sustainable development,'

ii. Acknowledge the need for new ways of engaging people, and empowering community and voluntary groups, to ensure that **the** various **values of towns** (cultural, heritage, innovation, service centres, incubators of enterprise) **are not lost with the demise of town councils**,

iii. Recognise the **geographical dynamics** of towns growing and declining and advance the best management strategies at national level to protect their various values,

iv. Ensure that **towns are** recognized as a '**critical national infrastructure**' in Regional Planning Policy, industrial location policy, and state services provision,

v. Ensure that **the Rural Development Policy should recognise the role towns play in economic development**, by acknowledging an urban strand to funding for REDZ,

vi. Ensure that **poverty and social exclusion issues**, which have a **specifically urban expression**, are addressed by national policy, and

vii. The distribution of national investment takes cognisance of towns and regional development (Primary and secondary schools, University facilities, Garda stations, post offices).

Housing vacancy has been commented on extensively since the preliminary returns of Census 2016 have been published. The Housing Agency is about to launch a strategy for dealing with Vacant Homes. The re-use of existing houses to solve the housing shortage makes practical and environmental sense. The graphic depiction of Banagher, Co. Offaly, appended below, from Offaly County Council's 'Engage with Architecture' project illustrates an approach that can be taken to the use of the resource of vacant space in a small Irish town.

Economic prosperity in Ireland has, since 2003, depended on a property boom, especially in the residential sector. The end of this cycle has had catastrophic economic effects. But what of the environmental effects of the boom? It has been said that *'The most environmentally benign building is the one that does not have to be built* [because it already exists].' (Dimitrijevic, *et al*, 2000, quoting Grammenos and Russel, 1997). The preliminary results of the 2016 census of Ireland, dealing with housing, indicated that 12.8% of the habitable in the country were unoccupied (CSO, 2016). This represents a major under-utilised resource, and the NPF should provide a policy environment that would support the Housing Agency's forthcoming Vacant Homes strategy. This is likely to require not a dropping of standards, but the concerted effort of planning officials, along with other regulators at local authority level, to provide coherent and supportive advice to potential house re-users to ensure that they meet the standards and make use of existing dwellings with the minimum of fuss.

The Departments of Finance and the Department of Housing, Planning, Communities and Local Government, should consider fiscal measures such as site value tax to incentivise the sustainable use of these resources. The methodology of SEA requires the assessment of 'Material Assets', and should consider measures to make use of existing dwellings. This is a sustainability issue with a large heritage dimension.

Encouraging the re-use of existing buildings, especially houses, through planning policy would have clear environmental benefit. Dublin City Council included such a policy in its 2005 Development Plan:

'It is the policy of Dublin City Council to seek the retention, re-use and refurbishment using appropriate materials and techniques, of older buildings of architectural, cultural, historic and aesthetic merit which, though not protected structures, make a positive contribution to the character, appearance and quality of local streetscapes and the sustainable development of the city' (Dublin City Council, 2005, p.77)

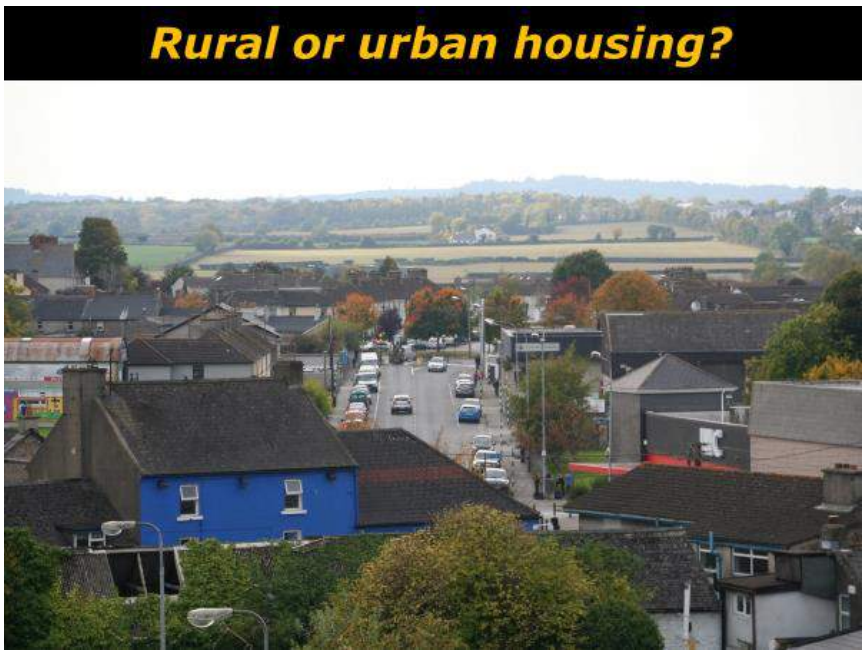
Each development plan that includes an urban area should be audited to ensure that its zoning and other policies provide a supportive environment for adaptive re-use of upper floors for housing. SEA could encourage such policies to improve the environmental performance of the development plan under consideration.

More egregiously, 'the premature demolition of perfectly sound buildings' (Brian Hogan, 2017) has been noted. The embodied energy in these buildings takes years to recover over and above the cost of discarding the embodied energy in their structure, and demolishing and removing it from site, and the re-erection of a new structure in their place. Hogan instances 14 cases of large late twentieth century office blocks in Dublin being needlessly wasted as environmental resources.

The streetscape of Molesworth Street in Dublin has been transformed for the second time in fifty years by this practice. It is surely environmentally unjustifiable. The demolition and rebuilding of forty- or fifty-year old structures is but the most illogical version of how we treat the environmental resource that is older buildings. Planning policy should be able to prevent the wastage of these resources. Research into Life Cycle Analysis and the embodied energy and the environmental value of structures and materials should inform planning policy, and a government-level response in the NPF is justifiable.

Molesworth Street, Dublin, September 2016. Canada House (built 1982) and the Passport Office (built 1975) have been demolished. Photo Colm Murray.

h Energy use reduction and Rural and Urban Housing



Kilkenny streetscape with rural one-off house in the distance. September 2016. Photo: Colm Murray

Energy reduction strategies must take account of Life Cycle Analysis of the use of energy in

buildings, including embodied energy, transportation related emissions due to their location, and their floor area.

Duffy (2009) in his study '*Land use planning in Ireland: a life cycle energy analysis of recent residential development in the Greater Dublin area'* (copy submitted herewith) set out to examine how the spatial and demographic changes around Dublin in the decade up to 2002 affected energy utilisation and carbon generation. He looked at the full life span environmental impacts of the residential buildings being built at the height of the boom, and related these to land use policies.

> *'One third of the total housing stock in the Republic of Ireland has been built in 10 years up to and including 2006 and of this approximately 34% was built in the Greater Dublin Area (GDA). Much of the housing was low-density with poor public transport links leading to doubts over its sustainability—particularly in terms of energy use.'* (Duffy, 2009)

His specific aim was to quantify and compare the relative impact of urban, suburban and extra-urban residential developments in the built-up area of Dublin and in its hinterland. He ascribed broad statistically-based characteristics to the total energy content and greenhouse gas emissions of new residential development in terms of (i) construction, (ii) operation (heating, hot water, lighting and small power loads), (iii) travel (iv) maintenance and (v) demolition (although this last was largely discounted as unimportant). Whilst only travel (via locational choices) is related to spatial planning, there are other characteristics of development types that can be anticipated when planning decisions are made. He noted that the construction of small-scale high density apartment-type dwellings in the city centre has a greater per-square-metre environmental load as a form of construction, in comparison to the timber frame or concrete cavity wall built housing in the suburbs. This is tempered by two further factors – the number of people housed per square metre built is higher in the city centre, and these dwellings are more geometrically compact, having a smaller wall-to-floor area ratio than free-standing or semi-detached houses, and thus lose less heat through the fabric per inhabitant both proportionately and in absolute terms.

> *'Operating emissions from dwellings in the commuter town and extra-urban zones were almost twice those in the city centre both due to larger dwelling sizes and the predominance of detached and semi-detached dwellings (with large amounts of exposed walls) in the former and the prevalence of smaller apartments in the latter. Car use was most pronounced in the zones furthest from the city centre where per capita emissions were almost twice those of residents in the city centre.'*
>
> *'Had the development policy prescribed 'city centre'-type development and transport modes, then emissions for the year 2006 would have been* [reduced by]

almost 16% over the actual figure and representing approximately 4.1% of national emissions.'

'Transport-related CO2 emissions are therefore almost 85% higher for residential developments in the commuter towns than in the city centre and approximately 16% and 54% higher for suburban (Zone 2) and extra-urban (Zone 3) areas, respectively. These figures demonstrate significant benefits in promoting high-density spatial planning policies.' (Duffy, 2009)

This details clearly the environmental impact of spatial planning policies. It is the purpose of Strategic Environmental Assessment to ensure that the implications for the environment are understood from the outset. I recommend this study as of fundamental importance to the National Planning Framework.

i Balancing Regional Development

During the growth years of the 'Celtic Tiger', Dublin grew rapidly, both physically as an urban area, and as the economic powerhouse of the boom. However, it became apparent even before the current recession set in that the growth of Dublin in both economic and physical dimensions was not sustainable (Convery, *et al.,* 2006) and that the economic growth would strangle itself in congestion, uncompetitive prices, and diminishing quality of life (Boyle, pers. Comms, 2005[1]). Much of the credit for Irish economic growth has been ascribed to 'well-focussed government action' (Convery, *et al.,* 2006). But with strong growth came geographical imbalances on multiple scales - between the Greater Dublin region and the rest of the country (greater economic disparity and the emergence of infrastructural 'bottlenecks'), within the Greater Dublin region (dispersed residential pattern and long-distance commuting (Williams and Sheils, 2002)), and within the urban area of Dublin due to suburbanisation (Convery, *et al.,* 2006).

> *'The evidence … suggests only limited adherence to regional planning guidelines, … an unsustainable metropolitan area with all manner of transportation and housing problems…pursuing a path which is leading to unsustainable urban and regional development'* (Redmond *et al.,* 2005).

[1] Gary Boyle, Compensations and Benefits Manager, Intel Ireland, Leixlip, Co. Kildare, 2005. Based on experience of exit interviews of departing staff on the reasons for their ceasing employment with the multinational company. For example, lack of choice in crèche facilities for workers living in the commuting catchment of the plant, or the perceived difficulty in buying a house in an acceptable location.

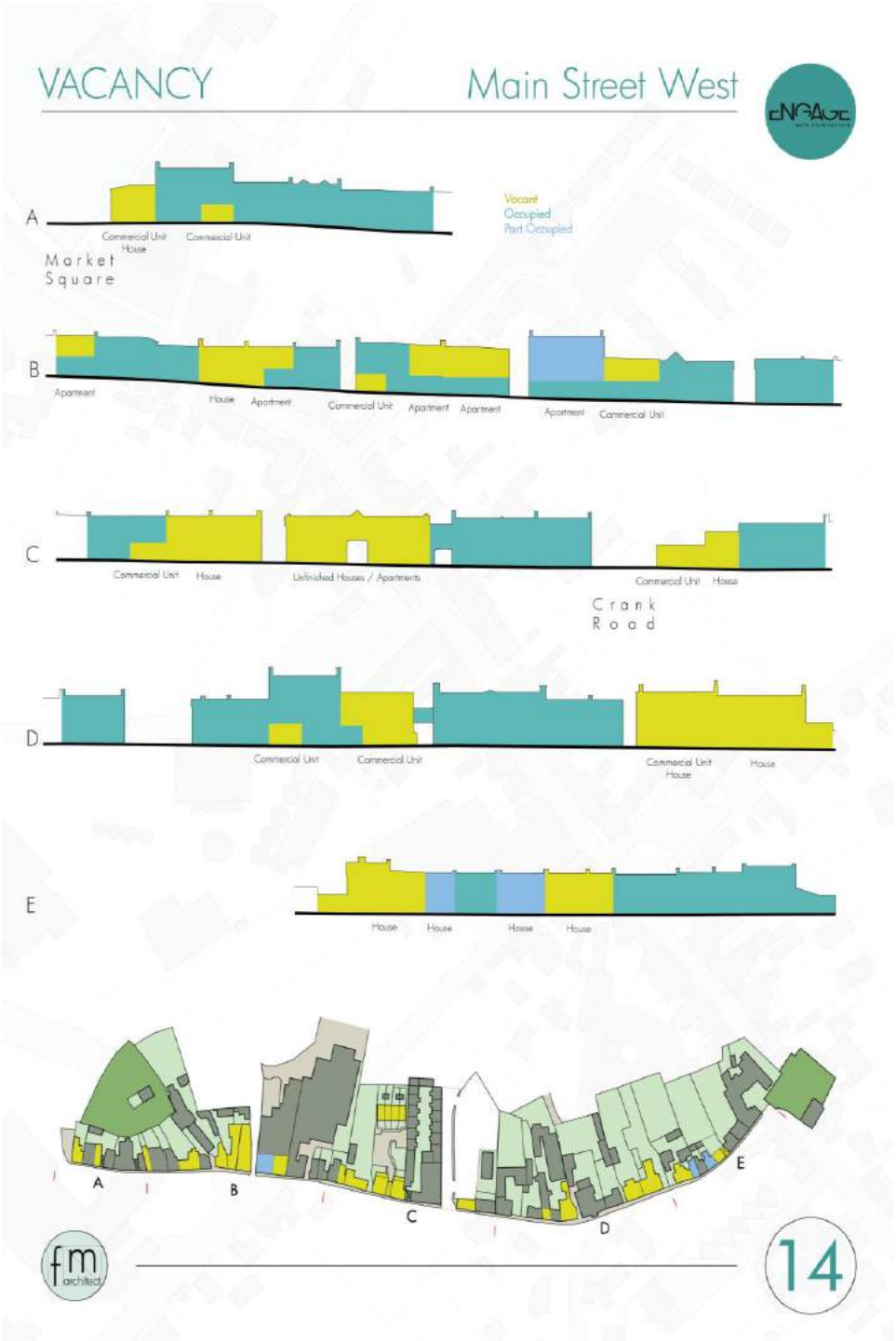
j It is a contradiction in terms to talk of sustainable growth.

The National Planning Framework should not assume that 'development' is manifestly, inevitable and unequivocally 'good'. 'Sustainable development', coined by Bruntland in 1987, might change societal aspirations from those related to 'growth' to a more nuanced concept of evolution, and change within limits. Bruntland recognised that a transformation of the relationship between humans and non-human nature was necessary for 'our common future' to be viable in the long term. The implications, frequently lost in public policy discourse, is teased out by Herman Daly:

> *'Sustainable growth is impossible … The term 'sustainable growth' when applied to the economy is a bad oxymoron – self-contradictory in prose, and unevocative as poetry.… To grow means 'to increase naturally in size by the addition of material through assimilation or accretion'. To develop means 'to expand and realise the potentialities of; to bring gradually to a fuller, greater, or better state'. When something grows it gets bigger. When something develops, it gets different. … Currently the term 'sustainable development' is a synonym for the oxymoronic 'sustainable growth'.* (Daly, 1990)

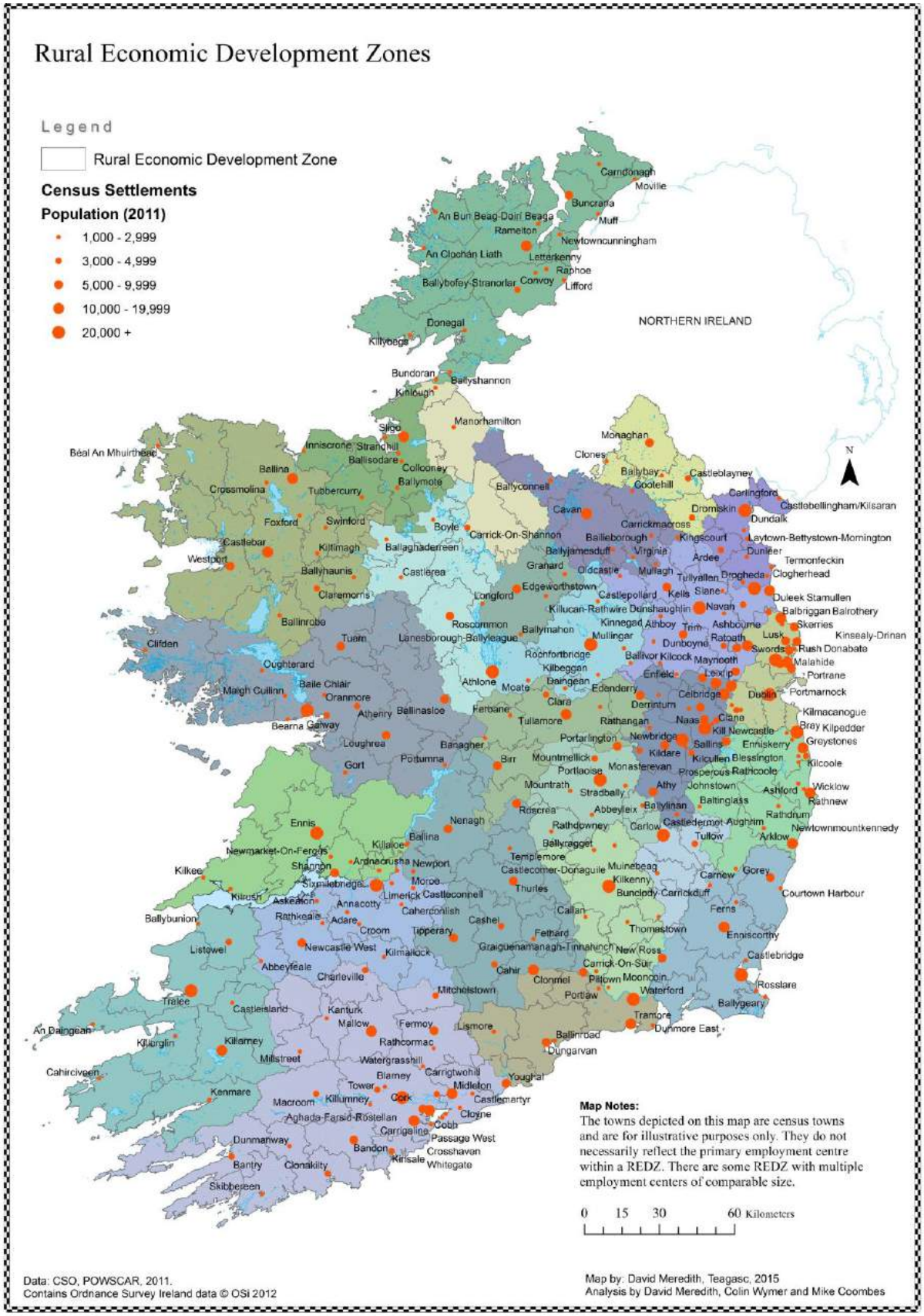
i Who has got it right?

The Dutch plan carefully and consult extensively about their national spatial plans - they have to: there are 15 million people crammed into an area not much bigger than Munster, and both the North Sea, and tow of Europe's great rivers threaten to flood their country if they do not take adequate collective precautions that impact on the way that land is used. Their planning consultations are so extensive that they include hardback book publications in English. In 2000, as part of their deliberative and inclusive national planning process, they published a book *Remaking NL – Cityscape. Landscape, Infrastructure,* to inform the decision making process. It outlined alternatives and choices that could be made <u>before</u> the decisions as to how to proceed were taken.



Graphic: Fran Moran Architect, from 'Engage with Architecture' Project, Offaly County Council, 2012 downloaded from http://www.offaly.ie/eng/Services/Heritage/Architecture/Engage-with-Architecture-/

The under-utilised resource of buildings in Ireland's towns.


Rural Economic Development Zones
Legend
Rural Economic Development Zone
Census Settlements
Population (2011)
1,000 - 2,999
3,000 - 4,999
5,000 - 9,999
10,000 - 19,999
20,000 +
NORTHERN IRELAND
N
Map Notes:
The towns depicted on this map are census towns and are for illustrative purposes only. They do not necessarily reflect the primary employment centre within a REDZ. There are some REDZ with multiple employment centers of comparable size.
0 15 30 60 Kilometers
Data: CSO, POWSCAR, 2011.
Contains Ordnance Survey Ireland data © OSi 2012
Map by: David Meredith, Teagasc, 2015
Analysis by David Meredith, Colin Wymer and Mike Coombes

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