

# mainstreaming green infrastructure as a health- promoting asset

Drawing on recent policy and practice in Ireland, particularly as promoted by the National Planning Framework, **Mark Scott**, **Mick Lennon** and **Owen Douglas** look at green infrastructure's potential as a health-promoting framework



Áit Urbanism + Landscape

**Balbriggan Public Realm Plan - sketch proposal for Mill Park in Balbriggan, Ireland, showing a range of user activities and incorporating additional tree planting and greening, with attractive waterside uses catered for in and around a newly formed weir pool. Formal paved terraces and a playground create opportunities for events and children's play, respectively**

Since the mid-2000s, green infrastructure (GI) has emerged as an important concept underpinning the preparation of spatial plans in Ireland, providing a means to operationalise an ecosystem approach within the built environment. The purpose of integrating GI into spatial planning has evolved from its initial use in reimagining green belts and

greenways towards a more sophisticated tool for the sustainable management of land use. This has enabled planning authorities to meet multiple planning objectives and environmental obligations through multi-functional GI strategies.

However, a neglected aspect of practice has been the maximisation of health benefits from GI. This

article examines GI as a potential health-promoting framework, drawing on recent policy and practice in Ireland. First, we examine the introduction and evolution of green infrastructure in Irish spatial planning and explore the growing recognition within health policy of the environmental determinants of health. Secondly, we critically appraise the Irish National Planning Framework,<sup>1</sup> in terms of both its centralising of healthy communities as a key planning goal and its promotion of GI for multi-functional health benefits – including enhancing physical activity and mental wellbeing, mitigating noise and air pollution, and future-proofing cities against health risks associated with climate change (heat stress and flood risks). Finally, we reflect on the prospects of advancing GI and health within a traditionally pro-development planning system.

### Irish spatial planning and GI approaches

The Irish planning system closely resembles the British system, as various comparative studies highlight.<sup>2</sup> The original planning system was introduced only in 1963, establishing at a local authority level land use regulatory instruments based on the formulation of land use development plans and discretionary development control.

The current system has been largely shaped by the Planning and Development Act 2000, which modernised the original system of planning in the face of rapid economic and physical development during the so-called ‘Celtic Tiger’ era. The 2000 Act put in place a system based on the ethos of sustainable development (broadly conceived)<sup>3</sup> that was more strategic in scope, covering national, regional and local levels,<sup>4</sup> and that increasingly adopted a European vocabulary of *spatial* planning.<sup>5</sup>

The current system involves a three-tiered system of plan-making:

- a National Planning Framework, published in 2018 (replacing the National Spatial Strategy of 2002);
- Regional Spatial and Economic Strategies, currently under preparation (replacing regional planning guidelines); and
- development plans at local authority level.

Over the last decade, spatial plans and policy have increasingly adopted a green infrastructure approach for the sustainable management of land use. Such a GI approach to spatial planning attempts to move beyond traditional site-based ‘protect and preserve’ approaches to landscapes and green spaces and towards a more holistic approach that acknowledges the complexities of social-ecological interactions.<sup>6</sup> In this context, Scott *et al.*<sup>7</sup> define GI as:

*‘an interconnected network of multi-functional green space, urban and rural, which is capable of delivering a wide range of environmental and quality of life benefits for local communities and wildlife.’*

Therefore, in contrast to traditional planning approaches, GI planning includes not only protecting landscapes and green spaces but also enhancing, restoring, creating and designing new ecological networks based on maximising the capture of ecosystem services and benefits. Fundamental to this perspective is the idea that GI provides multi-functional benefits, suggesting that GI networks should be *designed and managed* as multi-functional spaces: for example, an urban green space may be designed to aid local drainage management, provide a habitat for wildlife and biodiversity, mitigate the urban heat island effect, mitigate local noise and air pollution, and provide a space for recreation and social interaction.<sup>8</sup>

In a review of the evolving interpretation of GI within Irish planning strategies, Lennon *et al.*<sup>6</sup> identify three broad phases (as summarised in Table 1 on the next page). The first phase of GI thinking within spatial planning in Ireland (early-mid 2000s) is associated with *networked approaches*. This included the emergence in 2002 of an ‘ecological network’ approach that prioritised the conservation of habitats and green mapping exercises in some local authorities. The popularity of this approach appears to have persisted until 2005, when it was overtaken by a ‘green network’ concept, which emphasised multi-functionality in the planning and management of natural heritage. Discernible between 2005 and 2008 was a continued and increased focus on land use multi-functionality, while also extending the established ‘green network’ policy discourse to dissolve traditional perspectives on the incommensurability of ecological conservation and anthropocentric land use.

The second phase, in the late 2000s (2008-2009), marked *GI’s emergence* as a multi-functional planning approach. By early 2008, new planning policy initiatives concerning green space management had sought to integrate biodiversity conservation with recreational space provision. Coinciding with this was the rising popularity of the ecosystem services paradigm, which helped to promote and establish new perspectives on conservation policy that increasingly viewed elements of the natural and semi-natural environment as ‘ecological assets’.<sup>9</sup>

The third phase, 2010s to the present, signals the *institutionalisation and ongoing evolution of GI* within spatial planning practice. The period from 2009 to the present has seen a considerable expansion in the spatial and functional applicability of a GI approach. Almost all spatial typographies, including brownfield sites and cultural heritage locations, are now considered as potential elements of GI. Simultaneously, the functions of GI have been expanded to include economic development and to align with smart-economy objectives.

By the end of 2011, GI had achieved representation in guidance at national, regional and local levels,

**Table 1**  
**Evolution of GI in Irish spatial planning practice**

Timeframe	Green infrastructure as ...	Key focus
Early 2000s	... <i>ecological networks</i>	<ul style="list-style-type: none"> <li>● Ecological corridors</li> <li>● Linking habitats</li> </ul>
	... <i>green structure</i>	<ul style="list-style-type: none"> <li>● Urban growth management</li> <li>● Strategic green belts</li> </ul>
Mid 2000s	... <i>green linkages</i>	<ul style="list-style-type: none"> <li>● Amenity purposes</li> </ul>
	... <i>a green network or greenways</i>	<ul style="list-style-type: none"> <li>● Protection of natural heritage areas</li> <li>● Provision of green space for recreation</li> </ul>
	... <i>green chains or networks</i>	<ul style="list-style-type: none"> <li>● Multi-functionality</li> <li>● Proactive biodiversity enhancement</li> </ul>
Late 2000s	... <i>multi-functional networks;</i>	<ul style="list-style-type: none"> <li>● Network of multi-functional land uses serving social and ecological requirements</li> </ul>
	... <i>spatial connectivity</i>	<ul style="list-style-type: none"> <li>● Landscape-scale perspective</li> <li>● Multi-scalar</li> </ul>
2010s	... <i>essential infrastructure</i>	Incorporating the above, plus: <ul style="list-style-type: none"> <li>● Promoting resilience and adaptation</li> <li>● Environmental risk management (for example flood risk)</li> </ul>

while also enjoying reference in many non-statutory planning policy documents. However, with the exception of the approach taken by Galway City Council, the most comprehensive representation of GI was in the Greater Dublin Area, and more specifically within the local authorities comprising the Dublin metropolitan region. This eastern and urban bias continued through 2012 and into 2013. Although a number of rural local authorities now seek to promote GI, much of this represents an extension of traditional modes of ecological conservation via 'ecological networks', rather than a focus on enhancing the multi-functional potential of land. Nevertheless, recent initiatives by an increasing array of local authorities exemplify proactive and pioneering GI approaches that sensitively cater for urban growth while concurrently enhancing ecological integrity.

The various phases in the evolution of GI in Irish spatial planning practice and the implications for integrating an ecosystem approach into spatial planning are outlined in Table 1 above.

So while initially the GI approach emerged in Ireland from attempts to plan for the provision of green space and to develop multi-functional networks of green spaces, more recently GI has been framed as a means of mainstreaming an ecosystem approach within spatial plans.<sup>10</sup> Specifically, GI approaches have been championed within spatial plans as a multi-functional means of addressing environmental obligations and EU Directives within the planning system, notably relating to biodiversity

(the Birds and Habitats Directives), the Strategic Environmental Assessment Directive, and climate action (specifically the use of GI in flood risk mitigation as outlined in the Floods Directive).<sup>10</sup>

### Health, wellbeing and GI

While GI has been positioned to meet multiple environmental obligations within the planning system, more recently attention has also been given to the salutogenic potential of GI. This has resulted in a two-way recognition from within both the health and environmental planning sectors that environmental quality has an intrinsic relationship with health and wellbeing.

This integration of health and environmentally orientated planning policy was first stimulated by the adoption of a 'health in all policies' (HiAP) approach promoted by a government strategy document, *Healthy Ireland: A Framework for Improved Health and Wellbeing 2013-2025*.<sup>11</sup> Overseen by the Department of Health and the Health Service Executive (Ireland's National Health Service), the Healthy Ireland strategy marks a sea-change in approach which recognises that promoting and supporting a healthier society requires moving beyond a one-dimensional focus on health service provision (i.e. treating people in ill-health), towards health promotion and addressing the wider social and environmental determinants of health, and therefore emphasising wellbeing, quality of life and pathways towards a healthier lifestyle.



**Integrating green infrastructure into Local Area Plans – this example is from Dublin City Council's Naas Road Lands Local Area Plan, illustrating the connections between green spaces through additional GI elements**

This multi-dimensional approach towards health and wellbeing in turn implies a *whole-system approach* which recognises that an individual's health is affected by all aspects of their life – economic status, educational attainment, housing, and the physical environment in which they live and work. The *Healthy Ireland* strategy identifies the protection of human health as a fundamental aspect of environmental protection, but moves beyond a narrow focus on the direct pathological effects of pollution or chemical/biological agents to advance the potential effects on health of the physical and social environment, including urban development, land use and transportation, and in turn their impacts on entrenching health inequalities.

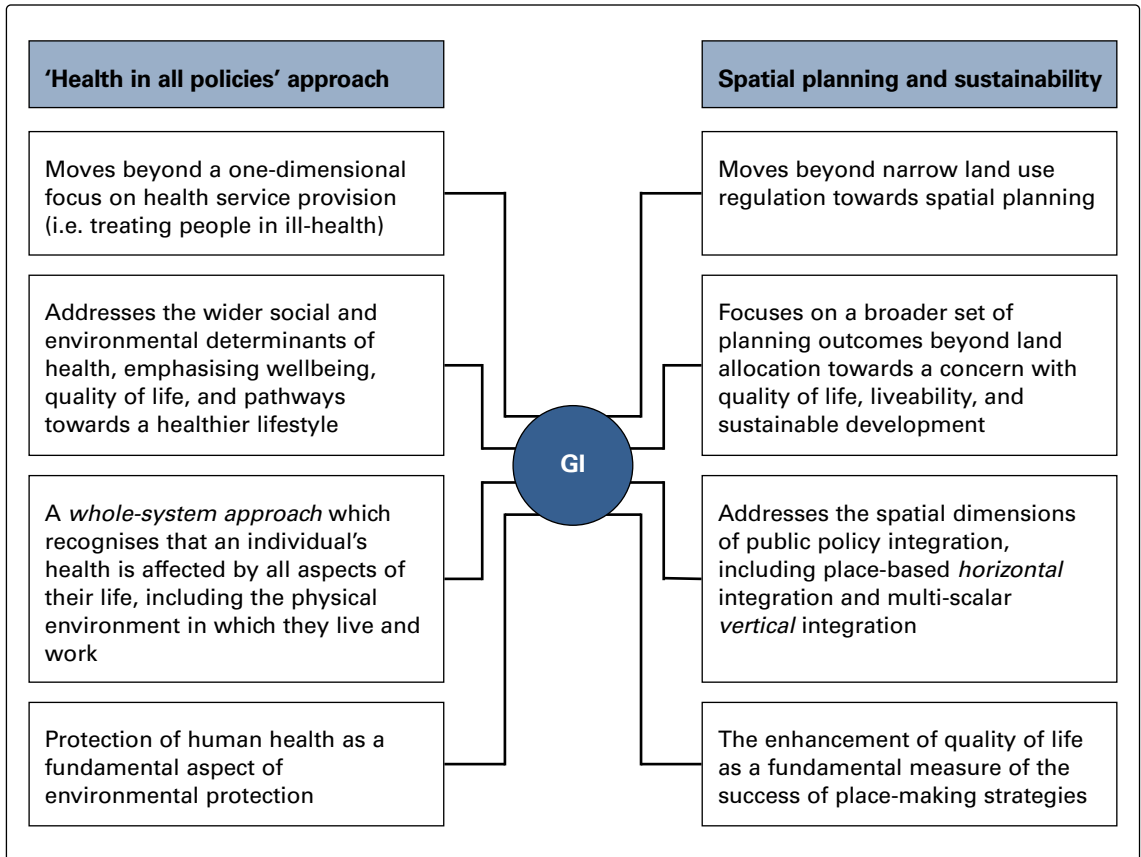
Furthermore, a supplementary document, *Healthy Ireland: Get Ireland Active*,<sup>12</sup> published in 2016, specifically calls on national and local government to ensure that the planning, development and design of towns and cities promote and encourage physical activity – for example through recreational amenities, green spaces, cycleways, and walkable neighbourhoods.

The influence of this HiAP approach is evident in the recent publication of Ireland's National Planning Framework (NPF),<sup>1</sup> launched in February 2018 and setting out Ireland's spatial planning strategy for the next 22 years, up to 2040. The NPF outlines how the quality of people's immediate environment plays a significant role in enhancing or influencing wellbeing. This theme is elaborated in Section 6.2: 'Healthy communities', which is underpinned by an understanding of the environmental and social determinants of health. Mirroring *Healthy Ireland*, the NPF states (on page 82):

*'Our health and our environment are inextricably linked. Specific health risks that can be influenced by spatial planning include heart disease, respiratory disease, mental health, obesity and injuries. By taking a whole-system approach to addressing the many factors that impact on health and wellbeing and which contribute to health inequalities, and by empowering and enabling individuals and communities to make healthier choices, it will be possible to improve health outcomes, particularly for the next generation of citizens.'*

[Emphasis added]





**Fig. 1 Emerging narratives within Irish health and spatial planning policies that are connected via a green infrastructure approach**

Source: Adapted from *Ecosystem Benefits of Greenspace for Health*<sup>13</sup>

Consolidating such explicit recognition of the central role played by planning in delivering on health and wellbeing, Chapter 9 outlines the NPF's environmental and sustainability objectives, which clearly identify the relationship between healthy ecosystems and human health. A notable development here is the NPF's promotion of nature-based solutions as a response to challenges faced by planning at the intersection of environmental protection and public health, illustrated by the prominence given to a GI approach in achieving more sustainable development, which notably identifies health issues as residing at the heart of this perspective. The thematic areas addressed include:

- **climate action and health risks** – encouraging a green adaptation strategy approach that seeks to use ecological services to enhance resilience in the face of climate change, such as the creation of green spaces and parks to enable better management of urban microclimates to counter the urban heat island effect (page 120);
- **flood risk management** – through a GI approach to sustainable drainage schemes (SuDS), to create safe places (page 124) that mitigate flood risks through nature-based solutions;

- **recreation and amenity** – green spaces as essential to community recreation and amenity (page 128), including green spaces that encourage physical activity and the benefits of exposure to nature on mental wellbeing;
- **air pollution** – the careful planning of green infrastructure as important for mitigating air pollution in a nature-based solution to remove pollutants from the air and better manage urban microclimates (page 128); and
- **noise pollution** – green spaces as an element of Noise Action Plans (for example green spaces as 'noise barriers'), and valuing and protecting green spaces as providing essential 'quiet areas' in cities that enhance local quality of life (page 129).

### Conclusion

Green infrastructure has been increasingly applied within spatial planning in Ireland, from national to local level, as a means of enhancing the (often neglected) ecological dimension of planning practice. GI has been mainstreamed into a variety of planning practices, including as a cross-cutting mechanism within statutory developments, a design

concept within local masterplans, and within development management as a problem-solving device to mitigate environmental impacts at the site scale. GI has also been widely viewed as a means for spatial planning to meet wider EU environmental obligations, including the Strategic Environmental Assessment, Birds, Habitats and Floods Directives.

Moreover, GI has cut across traditional urban and rural boundaries, providing a focus on sustainable land use based on ecosystem services rather than on urban and rural separation. The inclusion of specific GI objectives within the recently published National Planning Framework will further advance the institutionalisation of GI within planning guidance and development plans, providing a supportive policy environment for GI as a core planning practice.

Importantly, a GI approach has implications for how spatial plans connect with other policy domains. Policy integration across sectoral domains has been an enduring challenge for policy-makers faced with wicked problems marked by complexity that require a multi-actor response. In the Irish context, both health policy and planning practice have moved beyond their traditional narrow concerns to explore and attempt to embed integrative frameworks across health/wellbeing and place-based environmental quality considerations.

Within this emerging agenda, GI has been identified as supplying a concept bridge that can connect and mainstream actions across health and planning policy silos, thereby advancing the health dimensions of ecosystem services in a holistic manner across a broad spectrum of policy and practice (see Fig. 1 on the preceding page). First, GI approaches have been mainstreamed into planning frameworks as a means to meet environmental obligations (set out in EU Directives) and mobilise an ecosystem approach towards sustainable land use management. This process emerged from within local authorities, but has subsequently been institutionalised into national planning policy. This recognition at national level has the potential to open up new agendas for spatial planning practice as the NPF's objectives cascade downwards to regional and local spatial plans.

Secondly, and in parallel, health policy has sought to integrate health into a range of public policies, including policy streams across the natural and built environments. Spatial planning policy has responded to this agenda-setting approach by centralising health and wellbeing in the new National Planning Framework, while emphasising the potential of GI as both a conceptual and a physical shared space in which to maximise health benefits from land use management and mitigate health-related environmental risks.

● **Professor Mark Scott, Dr Mick Lennon and Dr Owen Douglas** are with the School of Architecture, Planning and Environmental Policy at University College Dublin, Ireland. The views expressed are personal.

## Notes

- 1 *Project Ireland 2040: National Planning Framework*. Department of Housing, Planning and Local Government, Government of Ireland, 2018. [www.housing.gov.ie/planning/national-planning-framework/project-ireland-2040-npf-7mb](http://www.housing.gov.ie/planning/national-planning-framework/project-ireland-2040-npf-7mb)
- 2 V Nadin and D Stead: 'European spatial planning systems, social models and learning'. *disP – The Planning Review*, 2008, Vol. 44 (172), 35-47; and G-J Knapp, Z Nedovic-Budic and A Carbonell (Eds): *Planning for States and Nation-States in the U.S. and Europe*. Lincoln Institute of Land Policy, 2015. [www.lincolninst.edu/sites/default/files/pubfiles/planning-for-states-and-nation-states-usa-europe-full.pdf](http://www.lincolninst.edu/sites/default/files/pubfiles/planning-for-states-and-nation-states-usa-europe-full.pdf)
- 3 M Lennon, M Scott and P Russell: 'Ireland's New National Planning Framework: (re)balancing and (re)conceiving planning for the twenty-first century?'. *Planning Practice & Research*, 2018, Vol. 33 (5), 491-505. doi: 10.1080/02697459.2018.1531581
- 4 B Grist: *An Introduction to Irish Planning Law*. Institute of Public Administration, Dublin, 2013, Second Edition
- 5 M Gkartzios and M Scott: 'Planning for rural housing in the Republic of Ireland: from national spatial strategies to development plans'. *European Planning Studies*, 2009, Vol. 17 (12), 1751-80
- 6 M Lennon, M Scott, M Collier and K Foley: 'The emergence of green infrastructure as promoting the centralisation of a landscape perspective in spatial planning – the case of Ireland'. *Landscape Research*, 2017, Vol. 42 (2), 146-163. doi.org/10.1080/01426397.2016.1229460
- 7 M Scott, M Lennon, M Collier and K Foley: *Integrating Ecosystem Approaches, Green Infrastructure and Spatial Planning*. EPA Research Report 188. Environmental Protection Agency, Ireland, 2016. [www.epa.ie/pubs/reports/research/biodiversity/EPA%20RR%20188%20web%20final.pdf](http://www.epa.ie/pubs/reports/research/biodiversity/EPA%20RR%20188%20web%20final.pdf)
- 8 M Lennon and M Scott: 'Delivering ecosystems services via spatial planning: reviewing the possibilities and implications of a green infrastructure approach'. *Town Planning Review*, 2014, Vol. 85 (5), 563-87. doi.org/10.3828/tp.2014.35; and O Douglas, P Russell and M Scott: 'Positive perceptions of green and open space as predictors of neighbourhood quality of life: implications for urban planning across the city region'. *Journal of Environmental Planning & Management*, 2018, Vol. 61. doi: 10.1080/09640568.2018.1439573
- 9 *The Economic and Social Aspects of Biodiversity: Benefits and Costs of Biodiversity in Ireland*. Department of Environment, Heritage and Local Government, Government of Ireland, 2008. [www.cbd.int/doc/case-studies/inc/cs-inc-ireland-en.pdf](http://www.cbd.int/doc/case-studies/inc/cs-inc-ireland-en.pdf)
- 10 A Scott, C Carter, M Hardman, N Grayson and T Slaney: 'Mainstreaming ecosystem science in spatial planning practice: Exploiting a hybrid opportunity space'. *Land Use Policy*, 2018, Vol. 70, 232-46
- 11 *Healthy Ireland: A Framework for Improved Health and Wellbeing 2013-2025*. Government of Ireland, Jun. 2013. <https://health.gov.ie/wp-content/uploads/2014/03/HealthyIrelandBrochureWA2.pdf>
- 12 *Healthy Ireland: Get Ireland Active. National Physical Activity Plan for Ireland*. Government of Ireland, Jan. 2016. <https://health.gov.ie/wp-content/uploads/2016/01/Get-Ireland-Active-the-National-Physical-Activity-Plan.pdf>
- 13 M Scott, M Lennon, O Douglas and C Bullock: *Ecosystem Benefits of Greenspace for Health*. Environmental Protection Agency, Ireland, 2019