

Mainstreaming green infrastructure as a health-promoting asset

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Introduction

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 operationalize an ecosystem approach within the built environment. The purpose of integrating GI into spatial planning has evolved from its initial use in reimagining greenbelts 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 multifunctional GI strategies. However, a neglected aspect of practice has been to maximize health benefits from GI. In this paper, we examine GI as a potential health-promoting framework drawing on recent policy and practice in Ireland. Firstly, we examine the introduction and evolution of green infrastructure in Irish spatial planning and explore the growing recognition within health policy given to the environmental determinants of health. Secondly, we critically appraise the Irish National Planning Framework (2018), both in its centralizing of healthy communities as a key planning goal and its promotion of GI for multifunctional 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 (Nadin and Stead, 2008; Knapp et al., 2015). The original planning system was only introduced 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 Local Government Planning and Development Act 2000, which modernized 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 that was based on the ethos of sustainable development (broadly conceived) (Lennon et al., 2018), which was more strategic in scope covering national, regional and local levels (Grist, 2013), and increasingly adopted a European vocabulary of *spatial* planning (Gkartziou and Scott, 2008). The current system involves a three-tiered system of plan-making: (1) a National Planning Framework published in 2018 (replacing the National Spatial Strategy, 2002); (2) Regional Spatial and Economic Strategies, currently under preparation (replacing regional planning guidelines); and (3) 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 approaches of 'protect and preserve' of landscapes and green spaces towards a more holistic approach that acknowledges the complexities of social-ecological interactions (Lennon et al, 2017). In this context, Scott et al. (2016) 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 that GI provides multifunctional benefits, suggesting that GI networks should be *designed and managed* as multifunctional 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 (Lennon and Scott, 2014, Douglas et al, 2018).

In a review of the evolving interpretation of GI within Irish planning strategies, Lennon et al. (2017) identify three broad phases (summarised in table 1). 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 multifunctionality in the planning and management of natural heritage. Discernible between 2005 and 2008, was the continued and increased focus on land-use multifunctionality, 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 multifunctional 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 ecosystems services paradigm which helped promote and establish new perspectives on conservation policy that increasingly viewed elements of the natural and semi-natural environment as 'ecological assets' (DEHLG, 2008).

The third Phase, 2010s to 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 aligned with smart economy objectives. By the end of 2011, GI had achieved representation in guidance at national, regional and local levels, while also enjoying reference in many non-statutory planning policy documents. However, with the exception of 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 multifunctional potential of lands. 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 into Irish spatial planning practice and the implications for integrating an ecosystems approach into spatial planning, are outlined in Table 1 below.

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"> • Ecological corridors • Linking habitats
	<i>...green structure</i>	<ul style="list-style-type: none"> • Urban growth management • Strategic greenbelts
Mid 2000s	<i>...green linkages</i>	<ul style="list-style-type: none"> • Amenity purposes
	<i>...a green network or greenways</i>	<ul style="list-style-type: none"> • Protection of natural heritage areas • Provision of greenspace for recreation
	<i>...green chains or networks</i>	<ul style="list-style-type: none"> • Multifunctionality • Proactive biodiversity enhancement
Late 2000s	<i>...multifunctional networks</i> <i>... spatial connectivity</i>	<ul style="list-style-type: none"> • Network of multifunctional land uses serving social and ecological requirements • Landscape scale perspective • Multi-scalar
2010s	<i>...essential infrastructure</i>	Incorporating above + <ul style="list-style-type: none"> • Promoting resilience and adaptation • Environmental risk management (e.g. flood risk)

So while initially the GI approach emerged in Ireland from attempts to plan for the provision of green space and to develop multifunctional networks of green spaces, more recently GI has been framed as a means of mainstreaming an ecosystem approach with spatial plans (see also Scott et al. 2018). Specifically, GI approaches have been championed within spatial plans as a multifunctional means of addressing environmental obligations and EU Directives within the planning system, notably around 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 (Scott et al., 2016).

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, *Healthy Ireland: A Framework for Improved Health and Wellbeing 2013–2025* (Government of Ireland, 2013). Overseen by the Department of Health and the Health Service Executive (Ireland's National Health Service), Healthy Ireland provided a sea-change in approach that 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. This multidimensional 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 people 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*, published in 2015, specifically calls on national and local government to ensure that the planning, development and design of towns and cities promotes and encourages 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), launched in February 2018 to set 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 on *Healthy Communities*, which is underpinned by an understanding of the environmental and social determinants of health. Mirroring 'Healthy Ireland', the NPF states:

*'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' (p. 82) (emphasis added).

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. Illustrative of this is the prominence given to a Green Infrastructure approach as a means to achieving more sustainable development, which notably identifies issues of health 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 micro-climates to counter the urban heat island effect (p. 120);
- *Flood risk management*: through a GI approach to Sustainable Urban Drainage Schemes (SUDS) to create safe places (p. 124) that mitigate flood risks through nature-based solutions;
- *Recreation and amenity*: green spaces as essential to community recreation and amenity (p. 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 is identified as important for mitigating air pollution as a nature-based solution to remove pollutants from the air and better manage urban micro-climates (p. 128);
- *Noise pollution*: green spaces as an element of Noise Action Plans (e.g. green spaces as 'noise barriers') and valuing and protecting the role of green spaces as providing essential 'quiet areas' in cities that enhance local quality of life (p. 129).

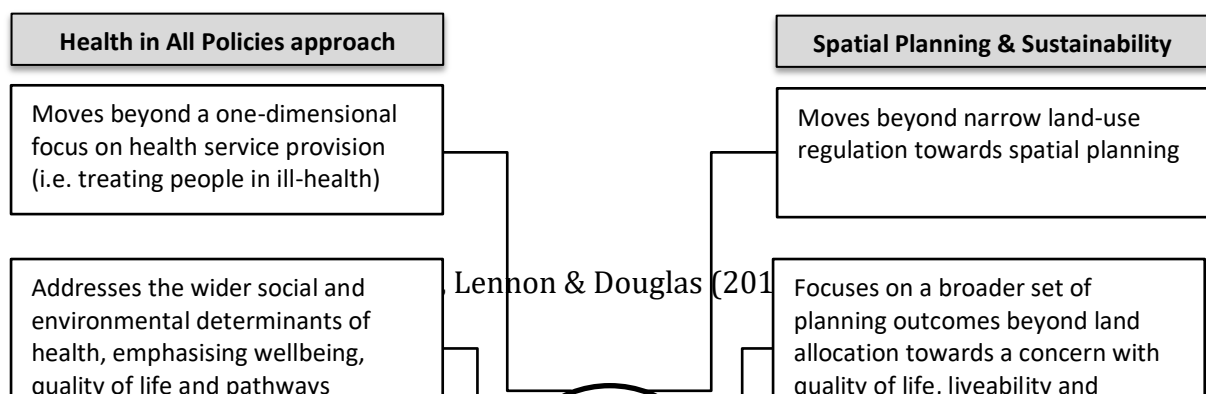


Figure 1: Emerging narratives with Irish health and spatial planning policies that are connected via the green infrastructure approach (adapted from Scott et al. 2019)

Conclusion

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. 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 Figure 1). Firstly, GI approaches have been mainstreamed into planning frameworks as a means to meet environmental obligations (from 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 environment. Spatial planning policy has responded to this agenda-setting approach by centralising health and wellbeing into the new National Planning Framework, while emphasising the potential of green infrastructure as both a conceptual and physical shared space in which to maximise health benefits from land-use management and to mitigate health-related environmental risks.

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