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Linking environmental and human health in English urban development decision-making: The human health literacy of environmental policy

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Abstract

In this paper we provide an overview of the UK environmental regulatory framework for sub-national policy and planning in devolved English urban areas based on a systematic coding of key legislation and policies against a matrix of sustainability attributes relevant for human health. Our findings suggest that while various elements of sustainability at different scales are addressed to varying degrees, we need to move well beyond the 'three-legged stool' of sustainability to assess linked environmental and societal health impacts. Assessing policy using a multi-faceted lens of sustainability such as the one we propose can help to uncover health-development dependencies and the incentives and governance required to enhance these at different scales (planetary, regional, neighbourhood and building). We propose a coordinative role for spatial planning to integrate responses to socio-environmental health priorities for sustainable development and make recommendations for dynamic decision-making on environmental and human health impacts in urban development settings. Doing so can help promote just (equitable) transitions, de-coupled from a pervasive ecological modernisation discourse that frames the political economy of planning at both the national and local levels.

Introduction

There has been widespread acknowledgement that societal patterns of consumption and pollution in global urbanisation are associated with unprecedented human activity-induced (anthropogenic) environmental instability and risks. However, there is a danger that a dominant 'anthropo-obscene' environmentalist "master narrative" demonises human interactions with the environment, overlooking that people are a part of nature and subject to health risks posed by contemporary patterns of urban development (Haines, 2016; Thomson & Newman, 2020). In contrast, 'rights of nature' theory has emphasised the interconnectedness of humans and the natural world in the determination of planetary well-being (Nash, 1989).

Socio-environmental models have drawn attention to the health of people as a fundamental component of nature, and of health equity as integral to sustainable urban development (Edwards et al., 2016). Indeed, the World Health Organization (WHO, 1946, p.2) definition of sustainable development recognised that "the enjoyment of the highest attainable standard of health is one of the fundamental rights of every human being". The role of inequality in healthy placemaking has been the focus of recent United Kingdom (UK) government policy agendas relevant for spatial planning (PHE, 2020), reflecting studies establishing links between urban air pollution, availability of green spaces and the socially and spatially uneven incidence of non-communicable diseases (NCDs).

Social well-being approaches recognise "the rich patterns of interactions and behaviours in human and natural systems", referred to as 'biocomplexity' by Bolte et al. (2007, p.570), and the need for multi-faceted preventive approaches to health. However, many policy definitions of what is considered sustainable development treat economic, environmental and social dimensions as distinct in what has been referred to as a 'three-legged stool' conceptualisation of sustainability, illustrated in the UK

National Planning Policy Framework (NPPF) which underpins English (sub-regional) planning policy. Notably, the three-legged stool construct of sustainable development fails to represent human health as a fundamental component of socio-environmental wellbeing and equity.

Despite the former Chief Executive of the National Health Service (NHS) England (BBC, 2019) endorsing that the social determinants of health contribute to a linked climate and human health emergency with spatial distribution and equity dimensions,[1] enquiry into the extent to which environmental policy in the UK takes human health into consideration has been absent. This paper addresses this gap by introducing a novel analytical framework to consider the health literacy of key UK environmental legislation that sets the context for subnational policy and spatial planning. The underlying research formed part of a larger study: 'Tackling the Root causes Upstream of Unhealthy Urban Development' (TRUUD) - focusing on Greater Manchester and Bristol case studies in the context of English sub-national devolution. Here, we define 'health' with reference to the World Health Organisation (WHO, 1948, p.2) constitutional definition of "a complete state of physical, mental, and social well-being and not merely the absence of disease or infirmity". Similarly, 'well-being' is an intrinsic component of the concept of global health which includes social components (Mansourian, 2009).

In the paper. we seek to address the following questions: First, to what extent does UK environmental legislation that frames English sub-national policy and planning consider human health? Second, what measures are needed to encourage pro-socio-environmental health benefits in urban development within the context of devolved English governance? Based on our findings, we contribute insights into the potential coordinative capacity of spatial planning to interlink priorities for the health of both humans and the physical environment, for urban responses to unsustainable development risks.

The remainder of the paper is organised in five parts. To inform our analysis, we begin by i) considering contributions to cognate social sciences literatures investigating the relationships between

environmental and human health. This serves as an overview of multi-dimensional sustainability attributes that informs our dynamic, multi-functional typology of sustainability. Following this, we ii) outline the socio-environmental policy landscape in the UK. We then iii) introduce our methodology, based on a systematic coding of key environmental legislation and policies against a matrix of sustainability attributes relevant for health and iv) present a policy assessment carried out against our coding framework. In the final section, we v) draw on these results to pinpoint directions for further research and the need for spatially sensitive, interdisciplinary collaboration to deliver positive urban socio-environmental health benefits in the devolved English governance context.

The Relationships between Environmental and Human Health

Socio-environmental health in the urban context

The primacy of socio-environmental health for the sustainability of an urbanised society in the Anthropocene has been illustrated in a growing social sciences literature. Sociological and cultural analyses of environment-society relations have highlighted the inextricable entanglement of the natural and the social worlds (Macnaghten and Urry, 1998; Heynen et al., 2006). With the aim of bridging the socio-environmental conceptual 'divide', Haines (2016) proposed the transdisciplinary concept of 'environmental health' to acknowledge the associations between environmental and human health and push the boundary of sustainable development narratives toward a definition encompassing multi-scalar processes and conditions that impact on planetary and human ecosystems.

At an urban level, 'material infrastructure' can affect health and collective social functioning in diverse ways. Transdisciplinary studies have found 'urban greening' interventions seeking to 're-nature' cities have multiple human / environmental health and socio-ecological well-being co-benefits (DEFRA, 2017; Li et al., 2019; McDonald and Beatley, 2020c; Mennis et al., 2018; TNC, 2017).

Benefits of access to urban green infrastructure (GI)[2] include the reduction of stress and obesity (Tsai et al., 2019), increased physical activity, cognitive development and 'mental capital' in children (Akpinar, 2017; Dadvand et al., 2015; Carrington, 2020), illustrating the spatial relationship between ecological and health attributes in an urban context (Becker et al., 2019; Aerts et al., 2020; RIBA, 2013; Adger, 2002; Albrecht, 1995; Haughton, 1999). Scalar issues related to air pollution and urban heat island effects[3] also reflect the need for a transdisciplinary and multi-scalar response (Stone, 2005, Barlow et al., 2017). Planning and design for healthy urban development therefore requires an informed understanding of complex interactions of individuals with natural and built landscapes and intra- and inter-generational equity issues (TCPA, 2015; Yiannakou and Salata, 2017; Pain et al., 2018; Pain et al., 2020).

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2 Defined by UK planning practice as 'a range of spaces and assets that provide environmental and wider benefits. https://www.gov.uk/guidance/natural-environment (last accessed 24.11.20).

3 Urban heat island effect is an urban or metropolitan area that has significantly higher temperatures than rural areas due to the urbanisation of land surfaces.

Research on health determinants has demonstrated the relevance of spatial scale for issues of equality. For instance, socio-economic inequality and its spatial impacts (Ballas et al., 2006), nature-based influence on well-being and individual agency (Bell et al., 2014) and equity in the distribution of well-being benefits in green spaces (Hunter et al., 2019; Allen and Balfour, 2014). Inequalities in societal and political power are mirrored in diverse injustices that underpin differential exposure to environmental conditions and health risks in themselves reinforced by uneven geometries of poverty, deprivation and linked vertical and horizontal spatial displacements of hazards, such as air pollution (Cochrane and Pain, 2000; Heynen, 2006; Barnett, 2011; Barlow et al., 2017). Complex variable daily social action spaces and residential mobilities at multiple geographical scales, as well as individual processes and attributes, are relevant for health equity and (in)justice (Curtis and Oven, 2012; Pearce et al., 2010; McDonald and Beatley, 2020a; McDonald and Beatley, 2020b). Lennon et al. (2017) argue that the presence of greenspace, for example, doesn't translate directly to health-promoting outcomes owing to other factors such as crime/safety and life-course opportunities in a given area.

Harvey (1999) drew early attention to the need to understand the urban environment in which such environmental/ecological and social processes are entangled as socially, culturally and politically produced, highlighting the relevance of the broader political economy of planning for healthy places and equity, which we turn to next.

The political economy of healthy places

Human health has become a core feature of planning policy in the UK, particularly since the publication of the NPPF in 2012. However, according to YouGov (2019), health is now widely perceived as a greater national concern in the UK than the environment or housing. McCann (2020) found that the UK "is one of the most regionally unbalanced countries in the industrialized world", including in relation to health. The gap in healthy life expectancy (years lived in good health) between the most and least deprived areas of England prior to the impact of Covid-19 was around 19 years owing to factors such as higher densities in the built environment, congested main roads and

poorer air quality in deprived areas (PHE, 2019).[4] Incidences of health vary by region, with the North-East and North-West of England having poorer health overall (PHE, 2019). One in eight UK households (12%) has no access to a shared or private garden, which increases to more than one in five households in London (21%), and affects black and ethnic minorities disproportionately (ONS, 2020). Older people tend to have private outdoor space (only 8% are without), highlighting intergenerational inequalities of access given the health benefits of greenspaces (ONS, 2020b).

Contemporary spatial planning has been argued by the UK Royal Town Planning Institute (RTPI, 2021) to have the capability to promote inclusive 'salutogenic' (health giving) sustainable urban environments. The United Nations Sustainable Development Goals (SDGs)[5], for instance, provide a framework for the improvement of environmental-social relationships. However, the contemporary UK neoliberal 'ecological modernisation' (EM) narrative casts the state as the institution responsible for national land use, development, spatial planning and environmental policy - a co-enabler (with the market) of 'green economy' sustainable development, independent of social and human health considerations (Blowers and Pain, 1999). This is reflected in the rights of nature discourse which contends that contemporary environmental laws are based on a framework that considers nature to comprise separate and independent dimensions (the three-legged stool of sustainability), rather than components of holistic well-being and is subordinate to economic interests. According to Keil and Boudreau (2006), EM provides a rationale for the roll-back of the state and 'roll-out environmentalism' without regard to priorities for human health, or spatially heterogeneous health and well-being needs at the local level.

The UK government has committed to improvements against the Healthy Life Expectancy (HLE) – a measure of self-reported good health that can affect life expectancy. The 'Health in All Policies' (HiAP) initiative (LGA, 2016) has sought to systematically and explicitly account for the health

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[4] Figures for 2021 are provisional and reflect the extraordinary deaths associated with Covid-19 communicable disease: https://www.kingsfund.org.uk/publications/whats-happening-life-expectancy-england
5 See: https://sdgs.un.org/goals (last accessed 24.11.20).

impacts of decision-making and target the social determinants of health whilst taking an active partnership-based approach. At the local level, this task has been channelled through health and well-being boards (HWBs) which have a statutory responsibility for public health, at council level since 2013 (LGA, 2016). Recent initiatives, such as 'natural capital' reporting in the General Health Questionnaire Index[6] (EFTEC, 2018), aim to demonstrate the role of nature in delivering health-promoting urban environmental improvements with 'health economy' benefits (OS, n.d). But the role of planning to facilitate these benefits is often tied to independencies with environmental legislation and EM discourses aligned with the 'roll-back' of state institutional welfare (Peck and Tickell, 2002), which can constrain how broader environmental public goods are conceptualised and regulated in post-2011 devolution fragmented English governance (Haughton, Allmendinger, & Oosterlynck, 2013; TCPA, 2018, p. 7). Questions are therefore raised for English subnational institutional capacity to address sustainable development priorities relating not only to the environment per se but to Haines' (2016) concept of holistic environmental health.

We take from our review of interdisciplinary literature that four dimensions of sustainability - 'environmental/ecological'; 'social'; 'spatial'; and 'political economy' – are relevant for creating healthy places in England. Investigating the human health literacy of UK environmental legislation is a valuable preliminary step toward the identification of measures to achieve spatially-sensitive English sub-national socio-environmental justice. We next develop a methodology to take the multi-dimensionality of socio-environmental health and well-being into account by examining the extent to which UK environmental legislation and policy consider human health and well-being as an intrinsic component of sustainable development. We focus on the underlying national legislative documentation as it is relevant to environmental governance, spatial planning and health outcomes within two UK devolved English combined authority areas.

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6 The General Health Questionnaire (GHQ) is a screening device for identifying minor psychiatric disorders in the general population and within community or non-psychiatric clinical settings such as primary care or general medical out-patients. See: https://www.gl-assessment.co.uk/products/general-health-questionnaire-ghq/

Methodology

Policy documents contain the discursive frames of cultural attitudes and action-orientated approaches; assessing wider terminology within policies helps reveal which types of policies are considering specific priorities, and which may be ignoring them. Following Planning Practice Guidance "Healthy and Safe Communities"[7], we understand that planning for healthy places is related to environmental issues at different scales of intervention (e.g. air quality, climate change, design, the natural environment, noise, open space, recreational facilities and location to amenities and services, as well as low-carbon energy). As such, we conducted a documentary analysis that examined how health and well-being phrasing is contiguous with different environmental dimensions of sustainability, as well as the political economy of framing 'healthy environments' to economic growth or addressing societal inequalities.

A longlist of national policies was compiled by an initial search on www.legistion.gov.uk for environmental and health/social policies and drew on a prior policy review carried out by the TRUUD project on salient development planning policies [link forthcoming]. As part of the overarching research project on health inequalities in the Bristol and Greater Manchester urban areas we undertook a complementary review of a selection of local planning policy documents and applications.

White papers and other non-statutory policy documents were generally excluded on the basis that these do not have a legal basis for environmental planning. UK environmental policy was considered only where it relates to English sub-national decision-making. We acknowledge that some UK environmental (planning) policy relates to the devolved nations of Scotland, Wales and Northern Ireland, and in these cases the related policy translation of environment-health approaches will vary. However, a UK-wide focus is beyond the scope of this study.

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7 https://www.gov.uk/guidance/health-and-wellbeing

We also recognise that retrospectively assessing wider environmental policy to assess the treatment of health is difficult as health will not necessarily have been its main focus, and as such there will be inevitable gaps in the treatment of the environment in relation to potential wider determinants of health. To address this, we have also looked at a limited selection of cross-cutting legislation and policies, including the NPPF and local-level policies (see below).

In addition, policies are shifting all the time in relation to government priorities and it was beyond the scope of this research to assess all recent environmental policies. Instead, we focus on the more stable policy entity of legislative Acts of Parliament. However, we are interested in how healthy environmental planning has changed over time; policies are often path dependent leading to a narrower choice of policy options, despite changes in government of different political persuasions (Kirk et al., 2007). Online Acts on www.legistion.gov.uk have hyperlinks to linked legislation and the dates of any amendments; such reinforcing amendments to environmental and related policy were also noted. A total of 53 UK legal acts and policies[8] were screened for their relevance to this study, with a total of 33 either partially or fully assessed.

At the English sub-national level, we reviewed key relevant policy documents. Neither the Greater Manchester nor the West of England combined authorities have a joint strategic spatial plan that covers all their constituent district areas, illustrating the fragmentation of post-devolution English governance (Haughton, Allmendinger, & Oosterlynck, 2013; TCPA, 2018, p. 7). As such, we focused on the Greater Manchester Combined Authority (GMCA) Spatial Framework - the 'Places for Everyone Joint Development Plan Document' (GMCA, 2021)[9], currently under examination. This case reflects how health is treated through processes of 'joining up' governance across a large urban area comprising nine of the total ten GMCA districts. In the West of England Combined Authority (WECA), attempts to reach agreement among its local councils on a spatial strategy covering Bristol, South Gloucestershire, and Bath and North-East Somerset, have so far failed. Reflecting the main

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8 The list of acts and policies reviewed is available from the authors on request.

9 Media reference to the Joint Development Plan as a 'masterplan' may reflect that the spatial framework does not cover the whole GMCA area due to the absence of Rochdale: https://www.manchestereveningnews.co.uk/all-about/greater-manchester-spatial-framework

focus of the TRUUD project on the Bristol City Council area, we assessed a selection of individual masterplans submitted for mixed development uses to understand which policies are being actively considered by developers and how individual applications are treating health and well-being issues alongside environmental ones in situ.

Initial policy analysis was conducted from July to September 2020 with an additional screening of policies conducted in early 2022 after the passing of the Environment Act 2021 and consultations on the GMCA Spatial Framework.

All included documents were extracted into an Excel spreadsheet which indicated the year of publication. A matrix methodology was then used to summarise and analyse the qualitative data in a table of rows and columns to allow thematic data sorting accounting for health and sustainability attributes derived from analysis of health geography literature (see PHE/UWE, 2021) at different spatial scales[10]. This matrix approach was adapted from a method used in the 'THRIVES' framework (Pineo et al., 2019, Callway et al., 2020), Additionally, we used Adobe Acrobat to screen instances of health phrases ('health/y', 'well-being', 'deprivation', 'inequality', 'pollution') to extract relevant text from the documents assessed (including their paragraph/policy number) and how each reflected a core aspect of sustainability as their main discursive framing, and a separate column for any secondary/related discourses that explicate the policy's focus on health. Where relevant, the different scales of these related attributes were noted. The conceptual matrix used to capture coded policy elements is shown in Table 1.

Table 1 Conceptual matrix used to capture coded policy elements.

Health attribute (right)		**Regional health attributes** e.g., water, air quality, climate regulation, food production, soil quality, waste and sanitation, energy production, other products, culture and recreation, mobility	**Neighbourhood-scale health attributes** e.g., access to: retails and food, green infrastructure, employment, health care, active transport, education and skill, inclusive, equitable, decision-making	**Building-scale health attributes** e.g., access to thermal comfort, acoustic comfort, external light pollution, internal natural light, indoor space, visual comfort, indoor air quality, affordability, secure tenure, local environment quality, security and safety
Sustainability attribute (below)	**Planetary health** e.g., biodiversity, zero-carbon, natural resources			

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Environmental - Ecosystems, landscape, ecological thresholds	Examples of planetary health depicted in terms of ecological thresholds	Examples of how landscape and ecosystems provide lead to agricultural output	Examples of how ecosystems provide benefits to the public realm	Examples of how trees provide benefits to urban heat island effect
Physical / infrastructure - Energy, low-carbon design, waste and pollution, built environment/materials	Examples of energy's contribution to net-zero	Examples of how waste and recycling can contribute to a reduction in pollution	Examples of how energy can lead to job creation	Examples of the build environment and design leads to improved building health attributes
Social - Inequality, health and wellbeing, intergenerational fairness/equity, patterns of social development, social thresholds	Examples of how planetary health contingent on social considerations	Examples of how health attributes are distributed equally	Examples of how Green Infrastructure is available to deprived communities	Examples of whether well-designed dwellings available in deprived communities
Political and regulatory - Policy mechanisms, administration, governance, standardisation	Examples of how governance arrangements and policies contribute to management of natural resources, renewable energy and ecosystems	Examples of how governance arrangements support clean energy	Examples of how policy supports community allotments	Examples of how policy contributes to positive built communities
Cultural - Environmental discourses and narratives, desirable elements of 'sustainable' design	Examples of key terminology used to depict planetary health, e.g. resilience, regenerative systems	Examples of key terminology used to depict water management solutions	Examples of how culture relates to types of reskilling and workplace schemes	Examples of ideal design types (and rationale)
Economic - Credits, incentives and other financial mechanisms; local, regional and national economies, innovation, net-zero economies	Examples of biodiversity net gain in action	Examples of how waste and recycling can lead to a circular economy	Examples of how incentives linked to encouraging healthy behaviours	Examples of how financial incentives linked to encouraging take-up of better domestic design schemes, e.g. Green Deal and Renewable Heat Incentive

Building on our literature review and this quantitative assessment**Error! Reference source not found.**

Results

In summary:

- Most of the environmental policies assessed where these related to healthy urban development and the environment referred to political and regulatory aspects of development, particularly effecting more regional attributes such as water, air, energy and climate regulation.

- Social aspects were considered, particularly at a neighbourhood-scale (typically in the NPPF).

- Reference to priorities for healthy and resilient economies was less evident except when linked to financial levies and incentives at a regional (or national) scale.

- Cultural aspects of planning for healthy places were absent in the national legislation assessed but were referred to in local policies.

- The treatment of health was often primarily contiguous, or conditional, upon economic growth discourses – reflecting the pervasiveness of EM within planning for healthy places, even in recent combined authority and local area policy developments.

Dimension 1 - Environmental/ecological

Dimension 1 speaks to discourse in the literature on the associations between ecology, infrastructure and environmental health geographies, with examples from selected environmental legislation below.

EIA regulations (EU-driven)

EIA regulations indicate the channels of environmental governance stemming from related EU legislation (*EIA Directive* (85/337/EEC). However, while health is listed in point a), Section 4, para 2, it is not mentioned explicitly in relation to environmental information at the point of an application (Section 6, 2) and is bundled with 'environment' under (Section 4,2). The Regulation conflates human health with environmental impacts and does not necessarily consider social issues and wider determinants of health or intergenerational fairness/equity, patterns of social development, and social thresholds. For instance, proxy data on climate change impacts are not always discussed in the context of the implications of health. The analysis of a selection of Bristol-scale masterplans also revealed that EIA-related documents (such as Environmental Statements) do not appear to always meaningfully refer to health policies, seemingly leaving that to the Health Impact Assessment (HIA) planning policy tool, and vice versa. HIAs similarly make limited reference to environment policies.

Climate Change Act (2008) and as amended (2019)

Though the Climate Change Act states that policies should contribute to sustainable development it doesn't specify what sustainable development *is*. Consultation on setting climate targets is geared to a national level which doesn't overtly mention related health and social outcomes.

Environment Act (2021)

Under the Environment Act, for cost reasons, developers need to seek to avoid the most valuable land for biodiversity as mapped through Local Nature Recovery Strategies (LNRSs). Increased monitoring of biodiversity value is increasingly related to natural capital-based ecosystem ecological assessments, such as using the Department for Environment, Food and Agriculture (DEFRA) 3.1 metric.[11] Local authorities will be required to produce a 'Biodiversity Report' every five years, which will be used to update LNRSs.

Air Quality Planning Policy Guidance (PPG)

Here, air quality impacts on sites designated for biodiversity importance are considered, thus reflecting a combined health and environmental focus, though the PPG is primarily focused on public health impacts. However, the UK legal limit value for air quality is double the WHO guideline (20 μg/m3 legal limit value vs 10 μg/m3 annual mean WHO target). While the Government's 2019 Progress Report and Clean Air Strategy stated that it commits to reducing the number of people in the UK living below the WHO's air quality threshold, the higher commitment was not reported in the 2020 25 Year Environment Plan progress report. This suggests that there are potentially inappropriate / misleading targets and issues with data quality that need to be addressed to improve air quality nationally and how these are discursively linked to wider determinants of health. However, at a local level, governments can seek higher standards. For instance, GMCA's Places for Everyone emerging spatial plan has committed to a localised WHO standard 'BreatheLife City' status by 2030 which aims to achieve the WHO's legal limit (GMCA, 2021, para 5.44).

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11 See *http://publications.naturalengland.org.uk/publication/6049804846366720*

Deregulation Act 2015

Planning policy requirements often stipulate performance above and beyond Building Regulations in support of local authority sustainability and climate change aspirations. The removal of the Code for Sustainable Homes (CfSH) under the Deregulation Act 2015 withdrew a policy framework for several areas that were covered in the scheme, including ecosystem ecology, and the sustainability and embodied energy of building materials, many of which impact on health and well-being (BRE, 2015). In addition, the Deregulation Act removed significant renewable energy target setting powers within the context of localism. For instance, national targets for microgeneration were withdrawn, as were targets set for the energy efficiency of residential accommodation, emission reductions and fuel poverty, and annual reports on progress towards sustainable energy aims (set out in the Climate Change and Sustainable Energy Act (2006) and the Sustainable Energy Act (2003)).

Additionally, the Deregulation Act's invitation for greater levels of permitted development (PD) led to a conversion of employment to residential uses in some areas which had been relatively protected from development since 1948. PD has since been extended to include the conversion of retail to residential space. In consequence, LPAs cannot now uphold environmental and design standards for such conversions through the planning system, including the enforcement of sustainable locations for development (Romøy and Street, 2018). Furthermore, it is unclear how policies that emphasise fuel poverty, such as the Climate Change Act, are cascading to local level climate budgets that consider health explicitly.

The limits of spatial planning's weakened emplacement of health to climate change impacts was particularly pertinent in the GMCA Places for Everyone (2021) document. For instance, while pollution was recognised as a key issue, and the Clean Air Zones set out in the Environment Act featured a clear role to tackle this, the wider issues of climate change, carbon neutrality and its links to health and quality places were described thus: "Many of these actions are beyond the scope of this plan, but the primary focus will need to be on transport given its primary contribution to air pollution" (para 5.49). This depicts both the scalar issue of addressing climate change but also how GMCA see planning's role to address this as lying within transport management planning as its "most significant

role" in residential design around reducing the need to travel by car. Moreover, para 7.33 also reflects the decoupling of quality of design to GI and well-being, where economic arguments dominate rationales for good design, with domestic GI only mentioned last. Though, in JP-G 2 (GI) environmental and public health benefits *are* decoupled from arguments of economic growth and the importance of GI to mental and physical health are prominent in Section 8 'Greener Places'.

Dimension 2 - Social

Dimension 2 reflects increasing research recognition that the physical and social environments cannot be treated as separate dimensions of sustainability.

Climate Change Act (2008) and as amended (2019)

Here, environmental harm is defined within social boundaries as "harm to the health of humans and other living organisms" and as "offences to the senses of human beings" (Interpretation of paragraph 4A, 4B).

Town and Country Planning (EIA) Regulations (2015)

Human health is referred to as the first priority. However, health interactions with other elements described in Section 4, para 2 and population-human health aspects are not mentioned explicitly (S10, 2). While social considerations need to impact the targets for each climate budget (S10, 2e), there is an emphasis on greenhouse gas/carbon unit emissions (e.g. S16, 2) at the expense of well-being beyond GDP metrics.

NPPF 2019

The GRIP2 'Getting Research into Practice' data resource (PHE, 2021, pp. 12-15) suggests that the NPPF "sets out explicit policy requirements pertinent to promoting healthier environments which align to the planning principles outlined in 'Spatial Planning for Health'" (PHE, 2021, p.12). The NPPF has a whole section dedicated to 'Promoting healthy and safe communities' (Section 8) which

can be further detailed in local policies[12]. However, it would seem that onus on the delivery of social objectives lies with communities under devolved community planning, for example for community-based infrastructure (see Para 28).

Social Value Act 2012, Local Government Act 2000, Green Book supplementary guidance on well-being

The legal requirement to consider social value in the commissioning cycle and local spending could have a bearing on the reduction of health inequalities in England by using procurement to address social determinants of health[13] effectively (PHE and UCL, 2015). However, the Social Value Act allows for a local authority to be excused from compliance in cases where time pressures does not permit this. Social value is also underpinned by The Local Government Act 2000 which sets out a responsibility for local authorities to promote well-being and promote sustainable development. Additionally, Green Book supplementary guidance on well-being states that evidence can inform policy making as well as guidance on how well-being impacts can be assessed or monetised and included in cost benefit analysis. However, the potential contributions of social value analysis to addressing health and well-being equality are not mainstreamed within local authority decision-making (Social Value Portal, 2021).

Equality Act 2010, Housing Acts (various), Landlord and Tenant Act 1985, Localism Act 2011

Housing and Equality legislation also has relevance for the social dimension of health and well-being. The Equality Act states that the public sector has a duty to address socio-economic inequalities (Part 1, Public sector duty regarding socio-economic inequalities) where it relates to socio-economic disadvantage outcomes. However, it does not explicitly mention development or the contribution that development can make to perpetuating or mitigating inequalities. Nor is reference to the Housing Acts

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12 For instance, Bristol City Council's Policy DM14 of its Site Allocations and Development Management Policies (adopted July 2014) sets the thresholds at which a Health Impact Assessment must be prepared to support individual planning applications and requires developments to contribute to reducing the causes of ill health, improving health and reducing health inequalities.

13 https://www.gov.uk/government/publications/local-action-on-health-inequalities-using-the-social-value-act

(e.g., 2004) or the Landlord and Tenant Act 1985 (and replacement), made. The Localism Act 2011 repealed the former regional authority responsibility for achieving 'good design', resulting in less subnational standardisation of how health impacts might guide design principles for social benefit.[14]

Health and well-being is linked to good design in the Bristol Core Strategy which was adopted in June 2011, as one of its eleven strategic objectives. Policy BCS21 aims to promote "high quality inclusive buildings and spaces that integrate green infrastructure". This link is echoed in the later Bristol Health and Wellbeing Strategy 2020-25, which aims to provide a mechanism to promote health-related ambitions in the Joint Strategic Health Assessment and the One City Plan regarding the reduction of "Adverse Childhood Experiences" through good design for: Healthy childhoods; Healthy bodies; Healthy minds; Healthy places; and Healthy systems.

While health is mentioned 160 times in the GMCA Places for Everyone (2021) document, reflecting notions of 'health impacts' (of COVID-19) and linked economic impacts and the unequalness of such impacts in society, 'good health' and 'fulfilling lives', health for its own sake and its social value, is often juxtaposed with other concerns and placed lower down the list of other priorities, akin to an afterthought or of lesser value. This is demonstrated in the Places for Everyone policy on Resilience, where out of a long list of 13 policy criteria, health is the penultimate one, referring to lifestyle and air pollution explicitly (JP-S 4, pp.92-3 - see also para 6.15 - access and health and well-being benefits are criteria 10 out of 13 in Policy JP-G 7 Trees and Woodland). Equality of access to GI is noted in para 8.41 (related to accessibility, quality and functionality of green space in densely urban areas); however, while mentioned at various points, equality of opportunity and access are relatively weak compared to economic arguments across the plan. Section 9 of the plan 'Places for People' is much more explicit about inequality of opportunity, for instance in para 9.1, quality of life is coupled with poor economic growth in deprived areas, low social and health capital, and affordability. Para 9.4 sequences these wider determinants of health further as they relate to inclusion (meeting needs of all, quality design, regeneration, affordability, inclusive growth, R&D/facilities, safety and facilities to

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14 c/f the National Model Design Code: https://www.gov.uk/government/publications/national-model-design-code

support health and well-being, sustainable transport, culture/leisure, GI, participation/process); health is listed as bullet 7 out of 11 indicating it is recognised as a more prominent aspect of inclusion, than say related economic or environmental aspects of sustainable development.

Dimension 3 - Spatial

Dimension 3 relates to issues of space, scale, socially uneven environmental health impacts and issues of justice.

Post-2010 deviations from previous planning policy frameworks and the limits and opportunities of localism

Pre-2010 central government Acts, Planning Policy Statements, PPG, Circulars and White Papers made provision for a variety of institutional arrangements for sub-national coordination on development and strategic planning issues relevant for health through Regional Spatial Strategies (RSS) and a range of Infrastructure Development Plans, Local Strategic Partnerships, etc. Changes post-2010 have impacted sharply on institutional arrangements in England and may have a bearing on health and well-being. Following the Localism Act 2011 removal of the regional government tier, the legal LPA duty to cooperate on strategic cross boundary issues proved ineffective and has been superseded by NPPF 'statements of common ground'.

The GRIP2 database suggests that localism is helping to generate social value through an emphasis on the cooperative delivery of services and civic and local government approaches (PHE, 2019, p.13). Neighbourhood Plans introduced under the Act could potentially help reduce existing inequalities at a local level by targeting the wider determinants of health. Yet despite some progress since 2012, the NPPF has been widely criticised within the planning profession for its oversimplification of sustainability challenges and the need for a long-term, larger than local planning perspective. The 'Planning for the Future' (MHCLG, 2020) consultation acknowledged health and well-being as issues impacted by the planning system, however, the translation of aspirations to outcomes has been unclear (LGA, 2020).

Decision-making and the inclusion of health bodies in planning is also affected by related health acts such as the Health and Social Care Act (2012) which abolished Strategic Health Authorities (SHAs), responsible for developing and improving health services in their local area, ensuring quality, measuring performance and ensuring that national priorities were integrated in Local Plans. SHAs have been replaced with NHS England, 200 clinical commissioning groups and, to an extent, health and well-being boards (HWBs). The NPPF expects Local Plans to make clear health contributions that should be sought from development (Para 34) but it does not make explicit the need for LPAs to engage with relevant health bodies (Para 25, Maintaining Effective Cooperation). There is potential for health bodies to be consulted in decision-making regarding public value, particularly where this relates to redistributive health benefits under any continuation of the UK 'levelling up' policy agenda[15].

Dimension 4 – Political Economy

Finally, dimension 4 engages with the cultural framing of sustainable development as a political economy narrative.

Home Energy Conservation Act (1995), Climate Change and Sustainable Energy Act (2006), Energy Act (2011), Climate Change Act (2008) and as amended (2019)

Energy conservation has clear ties to economic impacts, for example, the Home Energy Conservation Act (1995) and Climate Change and Sustainable Energy Act (2006). Several incentive structures also apply for different parts of the economy (notably the energy sector), which also relate to the reduction of fuel poverty and responsibilities of suppliers to reduce home heating costs (Energy Act (2011). Carbon trading schemes established through the Climate Change Act are purely created for carbon

[15] The 2022 UK Levelling Up White Paper set out an agenda for spreading opportunity more equally across the UK: https://www.gov.uk/government/publications/levelling-up-the-united-kingdom

emissions as opposed to other social goods or values (Part 2, 44), however, they extend to other energy-related outcomes.

Health and Social Care Act (2012), Public Services (Social Value) Act (2012), Environment Act 2021

Financial incentives to improve population health under the Health and Social Care Act (2012) are not explicitly tied to development gain mechanisms, such as Community Infrastructure Levy (CIL) or Section 106 agreements;[16] however, the latter may be used to support provision of health infrastructure which is also supported by the NPPF. While the Public Services (Social Value) Act (2012) does not include specific mention of health, social and environmental well-being are referred to in conjunction with economic well-being aligned to procurement. We also found there is scope to extend incentive mechanisms to support biodiversity net gain (Environment Act 2021) such as public goods and social value related to health.

The contiguous nature of health and economic growth are also pervasive at a local level. This is particularly obvious in section Supporting Long-Term Economic Growth (para 6.1):

> "Economic growth is central to the overall strategy for Greater Manchester. It will be essential to raising incomes, improving health and quality of life, and providing the finances to deliver better infrastructure, services and facilities."

In the GMCA Places for Everyone Joint Development Plan Document, there was a strong sense that health impacts were inextricably tied to arguments of economic growth, "mental and physical health and supports economic growth" being an illustrative example or describing COVID-19 as a "health-driven economic shock" (para 2.8). Even where instances of health were focused on deprivation or inequality, even here these were invariably tied up to discourses on economic growth.

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[16] S106 negotiated agreements and Community Infrastructure Levy (CIL) (introduced by The Planning Act, 2008) are local authority charges that raise funding for infrastructure, facilities and services associated with new development: https://www.gov.uk/government/publications/section-106-planning-obligations-and-the-community-infrastructure-levy-in-england-2018-to-2019-report-of-study

In some cases, standalone arguments related to health infrastructure (such as the proposed Bolton 'health village') were tied to the development of a wider strategic 'growth corridor' (Policy JP-Strat 8) or polices that sought to 'maximise… sustainable growth' of particular areas (Policy JP-Strat10).

Cultural aspects of health and well-being were invariably absent in the documents we assessed. However, even where cultural creativity was mentioned it was strongly subsumed within economic growth arguments, as something to be capitalised. As depicted here:

> "Building on our globally competitive research strengths and industrial opportunities in health innovation and advanced materials and capitalising on the creativity and collaborative culture of our people, our digital and technology asset base and our emerging capabilities in green industries - will be essential if the city region is to continue to attract investment and create new businesses and jobs for the future" (para 6.3).

However, while para 6.15 in the 'Place for Jobs' chapter was less focused on economic dimensions of 'prosperity' such a term can be construed as having economic connotations. Here, however, prosperity does indeed reflect the multiplexity of the dimensions of sustainability across different scales, such as equality of opportunity (just transitions), design, transport, re-use and regeneration, net zero, affordability, 'inclusive growth', R&D and related facilities, green spaces and biodiversity net gain. This brings opportunities to redefine place and societal prosperity in the context of planning for healthy and resilient places (though, out of 10 distinct bullet points, still 'health' was explicitly mentioned only in the penultimate one).

Discussion

The current English policy landscape is a highly dynamic space. Of importance UK-wide, our analysis has identified fragmentation across central government sectoral policies relevant for socio-environmental health and well-being. We find some evidence of connection between the social/health and well-being leg and the green environmental leg of the sustainability stool, but still the economic leg seems to be longer than others in national and local policy discourse; thus the stool risks being

toppled over as it seeks to capitalise on and justify health and environmental benefits coached within economic-dominated logics.

There is a need to unify objectives and measures across the siloed policy landscape. EU definitions of environmental impact and consideration of population and spatial equity have played a role in shaping UK legacy planning instruments. But in the context of the post-Brexit political ecology shift to a bordered governance regime and fluid Whitehall departmental structures and priorities, the prospects for policy coordination across the UK are uncertain. The short-lived Truss Government's Growth Plan (2022) sought to "drive growth and unlock housing across the UK by lowering taxes and liberalising planning frameworks to encourage rapid development and business investment" (HMG, 2022b), illustrating the potential hyper-fluidity of EM discourse with a change of leadership (in this instance within the same political party), toward an arguably temporarily quelled appetite for growth at all costs.

To deliver in the UK what Munro et al. (2020) termed 'sustainable health equity' linked to climate change mitigation, it is important to consider the spatial dimensions of natural resource consumption, emissions production and their environmental and health effects. This is being done at various points in legislation and local policy. And of course, different policies and plan sections will pick and choose the dimensions of sustainability to bring to the fore and sequence to support particular arguments. However, our findings reveal that gaps in the contiguous nature of health definitions within legislative texts and related policies need to be addressed to further decouple health from economic growth and EM discourses. For instance, we have found that health and social considerations are meant to impact the targets for each climate budget but these are not necessarily translated at a local level, at the expense of well-being beyond GDP metrics. Health and well-being are often presented low down on a priority scale of multiple policy criteria, or inequality is more prominently tied to discourses of growth and regeneration.

We agree with Sandifer et al. (2015) who emphasised that a coalition of spatial planners, health, social scientists and ecologist researchers is needed to inform policies that take the interactions between humans, nature and biodiversity into account. This should also be informed through critical debates

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on just transitions considerations and the reframing of health and well-being towards sustainable prosperity; as Jackson (2023) has argued that there is no wealth without health.

There is much untapped potential for further utilising social value analysis and social returns on investment evidence across the policy-making and implementation cycle to address health and well-being inequality which is not currently mainstreamed within local authority decision-making (Social Value Portal, 2021). However, access to robust data sources will be of utmost importance, which means considering independent, reliable data to underpin a more holistic approach to the improvement of environmental health conditions, including coordination with the Department of Health and Social Care (NCC, 2020). Models such as doughnut economics (Raworth, 2018) are attracting greater attention as a means of capturing social thresholds within planetary boundaries and there are opportunities to extend these further in the plan- and decision-making process (Burnett, 2022a; 2022b).

To do that requires effective incentives and frameworks to solicit just transitions/health considerations alongside wider emergence of natural capital markets in ways that empower decision-makers, health professionals, planners and citizens to reclaim the meaning of well-being in the context of value, autonomy and recovery. For instance, by extending incentive mechanisms to support biodiversity net gain (Environment Act 2021), such as public goods and social value related to health, and critically assessing how incentives in all policies make more explicit their contribution to a multi-faceted range of impacts on wider determinants of heath at different scales, akin to those outlined in Table 1. Incentivisation could go further still by entrenching the rights of nature into plans and policies to empower environmental health agency within the Anthropocene. This would help to open up discussions about the role of social and health capital within alternative valuations of 'the good life' and the conditions of societal prosperity, both of which should underpin key planning policy and guidance to shape investment around the social economics of development and frame planning application appraisal. In addition, these considerations should form part of a wider national accounting standard to indicate the 'regionalised' value of sustainability impacts across different

dimensions and scales, and to inform an appropriate scalar response to levelling up and place-based equity priorities in devolved English governance.

Conclusion

The paper set out to address two questions: First, to what extent does UK environmental legislation that frames English sub-national policy and planning consider human health? Second, what measures are needed to encourage pro-socio-environmental health benefits in urban development within the context of devolved English governance? Our approach involved the review of literature relevant to the geography and sustainability of environmental health and the existing cultural narrative of UK new environmental governance in English devolution. Our systematic analysis of the regulatory landscape as it applies to sustainability attributes, indicates a lack of attention to human health and well-being at a range of spatial scales.

We show that in this context, spatial planning has a role to play in co-shaping socially and environmentally just outcomes where strategic thinking across subnational scales and institutions is needed. For example, within planned Investment Zones, although the need to expedite the planning system to promote onshore wind is recognised (HMG, 2022, p.21): "The need for planning applications will be minimised and where planning applications remain necessary, they will be radically streamlined", which includes "disapplying legacy EU red tape where appropriate" to "unlock growth" (HMG, 2022a), i.e. "minimising the burden of environmental assessments" and "reforming habitats and species regulation" (HMG, 2022a).

Our results illustrate that to deliver 'sustainable health equity' (Munro et al. (2020) for environmental health justice in the UK, the spatial dimensions of natural resource consumption, emissions production and their environmental and health effects must be recognised in environmental regulation. To inform government socio-environmental health interventions, further research is required to monitor impacts from human activity and inform development planning using shared health and

environmental time-series data. This could deepen the GIS informed socio-economic analysis proposed by Ballas et al (2006). For the implementation of health literate policy, we see a role for spatial planning to coordinate collaboration between government tiers and departments, including community groups, to pursue socio-environmental health justice. We found the selected methodology employed in the analysis fruitful and suggest that such a sequencing and ordering of discourses can help quantify the value of health alongside other capitals and concepts of sustainable development. This would be useful for other interdisciplinary studies and a move towards the wider accounting of social and environmental health agency at different scales.

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Data availability

The data supporting the findings reported in this paper comprises secondary existing data. All secondary existing data used in this paper is openly available at locations cited in the 'References' section of this paper.

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Licence statement

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