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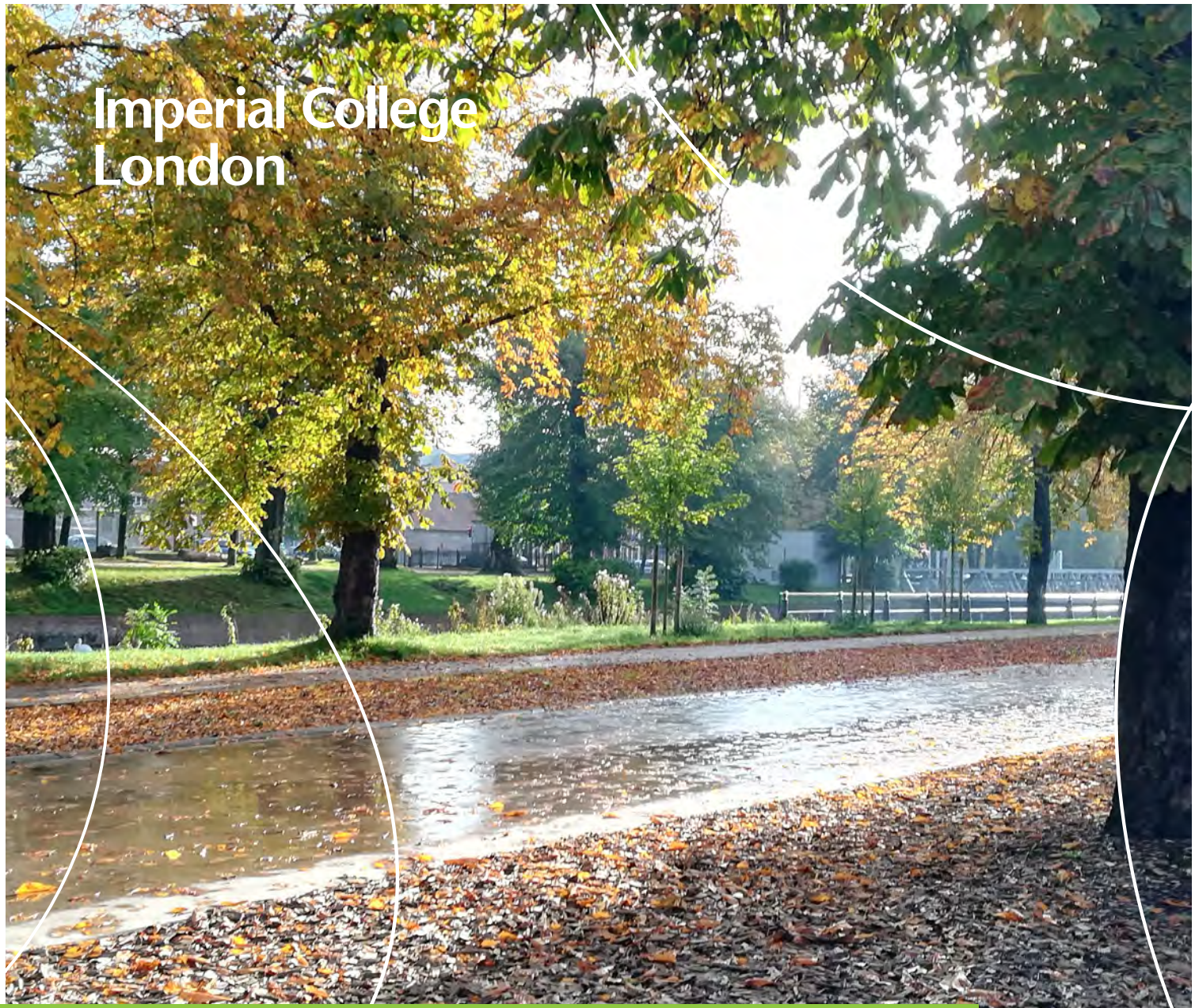

Photo: Phil Back

Getting more Green

Smaller municipalities' approaches to delivering green infrastructure

A report for the Nature Smart Cities project partnership
by Phil Back and Alex Collins, Imperial College London

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Interreg 2 Seas Mers Zeeën
European Regional Development Fund

NATURE SMART CITIES
ACROSS THE 2 SEAS

Photo: Lotte Meuleman

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Conclusions/executive summary

The report sets out the results of 53 semi-structured interviews conducted between November 2019 and February 2020, with officers and elected members in selected local authorities in the Netherlands, Belgium, France and the UK, all with populations less than 550,000. The research aimed to support the development of a Business Model to help smaller municipalities to build a business case for Green Infrastructure (GI). It sought an understanding of funding and approval processes for GI project implementation, the obstacles that might obstruct GI development, and the use (or non-use) of tools intended to help these processes.

1 There is no common understanding among local government officers in these cities of the term 'green infrastructure', nor of its benefits. The best recognised characteristic of GI is its multifunctionality, allowing projects to have multiple outcomes, to be described in different ways, or to have by-products separate from the central objective. Some respondents (also) emphasise connectivity as a key attribute.

2 Many respondents interpret GI in terms of beneficial impact on amenity and attractiveness, the economy, the environment and biodiversity, and on people generally. Although there is some awareness of the notion of ecosystem services, this is more limited, and awareness-raising may be needed to communicate projects' contribution to less obviously visible benefits such as water retention, air quality, or heat stress mitigation.

3 Levels of understanding among decision-makers are perceived as varying. Many elected representatives are seen as lagging behind their officer counterparts in understanding GI, though there are exceptions to this. Some local authorities are perceived as failing to match their high-level commitments through their everyday actions and decisions.

4 The trend is nevertheless towards a greater understanding of GI in municipalities, and public opinion, led by media coverage and celebrity support, is giving green issues a higher profile, raising awareness and demanding a response. However, implementing GI locally may be impeded by influential vested interests and other constraints.

5 Overall, respondents see their municipalities assigning high priority to making their cities more attractive, to public health, to active travel, and to recreation opportunities. Lower priority attaches to noise, land value, carbon capture and addressing excessive heat. These ecosystem services struggle for prioritisation against more tangible and visible outcomes. However, the overall results conceal enormous variations at city level, and there are also different perceptions even within local authorities, suggesting that local green priorities are not always clear or consistent.

6 There appears to be a strong potential relationship between an attractive place to live and GI more generally. As this is a high priority for many decision-makers, GI projects with other foci that can also be shown to be increasing attractiveness to humans may have a better chance of being approved.

7 The greatest obstacles to delivering GI projects in these municipalities are conflicting priorities within the authority, securing the necessary funding, convincing developers to take this kind of approach, and proving the value of GI in comparison with traditional approaches. However, the overall results conceal enormous variations at city level. Local authority capacity, in terms of skills, workloads, and resources, varies widely and impacts on the ability of some councils to deliver GI.

8 Planning regimes may exist in local authorities to promote GI as a component in major projects, but these requirements are often tokenistic and are not consistently enforced against other priorities that are seen as more pressing. Developers will be more disposed to co-operate with GI when they compete on a level playing field as regards these requirements. In the meantime, many decision-makers believe grey solutions are cheaper, and are more confident about grey cost calculations.

9 Internal conflicts over priorities most often arise in connection with housing and highways-related projects. Partnership with external bodies is often less problematic than achieving collaboration and co-operation within the authority itself. The significance of internal conflicts argues for a more corporate and co-ordinated, interdisciplinary approach to GI.

10 Funding for GI comes from a variety of sources, including the authority's own finances, other levels of government, other statutory bodies, the EU, from developers and other private sector interests, and from voluntary and community bodies. GI projects are generally seen as no more difficult to fund than any other initiative. Very few respondents look for funding ideas from other municipalities, and there is only limited active monitoring of new funding opportunities.

11 More advanced financial instruments such as those identified by the Zyen report are virtually unknown. Crowdfunding is understood, but seen as inappropriate for a local authority. Philanthropy can be controversial and portrayed as an attempt at greenwashing by companies with questionable environmental records, but there is also potential in some cities for business-financed GI as an element of corporate social responsibility.

12 A GI idea may need to be dressed up in appropriate evidential clothing to maximise its chances of approval and/or co-financing. This may mean emphasising benefits in an area known to be a local priority, or to match the enthusiasms or interests of a decision-maker; it can also mean being selective in identifying the ecosystem service outcomes of a project. Because GI projects are multi-functional, they can lend themselves to this approach to evidence-building.

13 The decision between green and grey infrastructure is often founded on cost. Although evidence of cost is needed for every project, there is a greater emphasis on cost-benefit and value in the UK than in other NSCiti2s cities. In general, though, cost-benefit analysis seems to be limited to cost and payback period, with no monetisation of ESS; local authorities lack the skills, knowledge, and data, to make these calculations, and to make them sufficiently credible to risk-averse decision-makers.

14 GI projects are often longer-term, delivering benefits that are relatively intangible and difficult to measure, but which can be presented as contributing to a municipality's high-level strategic commitments. However, these are not necessarily influential in decision-making on immediate or short-term projects. Short-termism and the need for visible results within the electoral cycle are often likely to prevail over longer-term ambitions, and it may be helpful to demonstrate short-term gains alongside the longer-term outcomes, or to phase projects to allow more immediate visibility.

15 Different cities prioritise social, environmental or economic gains from GI projects. These different emphases may also help to shape the supporting evidence for a project, since many GI projects offer gains in two or more of these broad areas. Direct benefits, which are understood as more visible, more immediately achievable, and more human-oriented, are thought more likely to win approval.

16 There may be merit in identifying potential GI projects for future implementation, against the possibility of a request from a decision-maker for an idea to spend leftover budget, or an unexpected invitation to participate in a provincial, national or supra-national opportunity.

17 Measurable data is not often a prerequisite for approval. Impact is more often expressed in general statements of ambition, rather than as measurable outcomes. Even where measurable data is used as evidence, monitoring of the achievement of targets is sporadic at best.

18 Decisions on GI projects can occur early in the approval process, using delegated authority, or as part of a more formal process that involves an assessment of the evidence and other inputs such as the results of public consultation, the advice of other departments, or considerations of timing or potential complications such as legal challenge. At higher levels of a municipality, there may be less attention to detail, and this should guide preparation of evidence.

19 Whilst the evidence can be structured and selected to assist approval, there is a view that a good project with a sound evidence base, and with funding lined up, should not be difficult to approve. It will be helped, nevertheless, by being multi-dimensional, by evidence of public support, by having political support and confidence, and by assuring inter-departmental co-operation and organisational capacity.

20 If a new appraisal and valuation tool is to be developed to help municipalities make the case for GI, its key attributes will be usability, comprehensiveness (addressing the full range of ecosystem services), and confidence in the results produced, which may include authentication through use elsewhere. Many existing tools are either unfamiliar to respondents, or have been discarded for failing to meet these criteria. A new tool will need to strike a balance between usability, credibility and precision.

21 Smaller municipalities may lack the skills, experience, time and specialist knowledge to populate, operate and interpret the results of a new tool. There may be an innate reluctance to rely on it, and specialist support may be needed to embed the tool and to guide interpretation. Collaboration across municipal boundaries and local authority disciplines, pooling resources and sharing costs, may enable wider utilisation of a new tool and increase authentication through widening comparability.

22 Inspiration in GI comes from attributes that include relief from a densely urban environment, ecological benefits and ecosystem services, repurposing of redundant land uses and popularity with local people. In smaller projects, community ownership, prioritisation of GI over other services, and the use of small-scale GI as an emblem of civic pride can also inspire. However, examples from elsewhere are not being utilised to anything like their potential to support local change, and authorities may need to allow themselves to delegate project ownership and responsibility into communities more.

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1 Introduction

1.1 Background to the project

Nature Smart Cities (NSCiti2s) is a project that aims to develop a business model for smaller cities to enable more effective and more accurate appraisal of green infrastructure (GI) projects, particularly in comparison with more traditional, grey, approaches. Funded by the European Union (EU) through its INTERREG 2seas/mers/zeeën programme, the project includes eight local authorities as 'city partners': Lille (France), Bruges, the Antwerpse Zuidrand, and Antwerp Province (all Belgium),[1] Den Haag and Kapelle (Netherlands), Cambridge (with Cambridgeshire) and Southend on Sea (United Kingdom). Three academic partners are also engaged, namely University of Antwerp, University of Ghent, and Imperial College London, and there are also observer partners, including the county authority for Essex (United Kingdom) and the province of West Flanders (Belgium). Imperial College London (ICL) was given the responsibility for delivery of this aspect of the NSCiti2s project.

In terms of geography, the project was defined by the INTERREG 2seas area, comprising the south-eastern counties of the United Kingdom, the coastal Netherlands, the Flanders area of Belgium and north eastern France.[2] Eligibility was defined in terms of local authority population, excluding authorities with populations of greater than 550,000. This enabled a focus on smaller cities and municipalities, potentially with fewer resources and/or lower capacity to develop and implement GI projects. The project and its overall objectives are described more fully on the INTERREG 2seas/mers/zeeën website.[3]

1.2 Research objectives

The research objectives can be summarised as research into building a business case for GI across the 2seas/mers/zeeën region, and understanding approval processes for project implementation, through semi-structured interviews. The research was expected to investigate opinion on the benefits of GI, and the drivers and enablers for delivery, and to explore how GI projects are approved and what information is required for this. Specific requirements were as follows:

- Obtain information on the beneficial aspects of GI that are of most importance to local authorities, and to funders and approvers of GI projects
- Develop in-depth understanding of the approval and funding processes involved with implementation of GI projects
- Identify factors that are key in enabling the approval of GI projects
- Identify the main barriers that prevent the implementation of GI projects
- Receive feedback on financial tools developed to support GI and how the utility of these could be improved

There were also additional questions for the managers for the NSCiti2s projects, covering areas such as selection of the project for NSCiti2s, measurement of benefits, and alternatives to the NSCiti2s funding.

1 The Zuidrand is itself a partnership between a number of smaller municipalities around the southern fringe of Antwerp, independent of the city itself and each with their own elected authority and staff establishment, but working in a co-ordinated way under the aegis of the provincial authority.

2 The area is described and mapped at https://www.interreg2seas.eu/en/content/programme-area [Accessed 23 June 2020].

3 See https://www.interreg2seas.eu/en/nsciti2s [Accessed 23 June 2020].

1.3 Methodological approach

The methodology selected for the research was the face to face, semi-structured interview. This offered several advantages:

- It allowed for exploration and challenge of the answers given to the various questions, through probing and more detailed questioning;
- It allowed for a flexible approach, focussing more on areas of greater relevance and interest, and not pressing those issues identified as less pertinent to, or outside the knowledge of, the interviewee;
- It allowed for the use of show cards and other stimulus material, providing variety in the questioning and opportunity to assess and compare numbers of issues that would have been too complex to explore using other approaches;
- It allowed for the interview to be recorded (subject to respondent consent) and transcribed for more detailed analysis;
- It allowed an interview of greater length and stronger focus than would have been possible using less personal methods such as use of videophone technology or online questioning;
- The visits to the different localities to conduct the interviews provided valuable contextual information for the interviewer and enabled more informed probing and analysis.

1.3.1 Eligibility for interview

The research brief called for 50 interviews to be conducted in total, with the expectation that most of these would be with project city partners. There would also be room for observer partners to participate - although in the end only Essex and West Flanders did so. Additionally, the application form called for an invitation to participate to be sent to a further 22 former INTERREG projects. Five of these projects that remained active and fitted within our criteria of geographical location and population size were invited, although only one (Middelburg, Netherlands) accepted.

1.3.2 Ethical approval

Ethical approval was sought and obtained from Imperial College London's Science, Engineering and Technology Research Ethics Committee. The study adheres to the principles outlined in the UK Policy Framework for Health and Social Care Research, and was designed to comply fully with the General Data Protection Regulations (Europe) and other appropriate regulatory requirements. A study protocol was developed and agreed accordingly.

1.3.2 Participant selection

Participants were selected using purposive sampling, from those directly involved with implementing GI as part of the Nature Smart Cities across the 2 Seas Project. Partner cities were asked to identify officers and elected members fitting this description, and most did so; additional information to help cities reassure participants was provided on request. Where cities were unwilling to recruit for themselves, the interviewer made direct contact with appropriate individuals identified through public domain sources, and emailed an invitation to participate that included a similar message. Copies of these documents are included in the appendix to this report.

The final list of candidates for interview included elected councillors and officers working in policy, planning and environment/sustainability rôles, officers involved directly in operational delivery of GI, and senior staff providing direction, oversight and strategic management for these officers.

The recruitment protocol stipulated that nobody would be put under any pressure to participate against their will, and that anyone might withdraw at any point without explanation. In the event only two candidates withdrew (one of these was replaced), although others may have declined participation without the researcher being made aware of this.

All participants were sent an information sheet and consent form in the appropriate working language of the project (English, French, Dutch or Flemish). Participants were asked which of the official languages of the project they wished to be interviewed in, and an interpreter fluent in the language chosen was provided if needed.

Explicit written consent to the interview, under the terms of the protocol, was sought and obtained on the day of the interview. This included agreement to the interview being recorded. All respondents gave consent for recording; one interview failed to record and was transcribed from notes and immediate recall.

1.3.3 The interview

A specialist interviewer, Dr Phil Back, who has significant experience both in this methodology and in local authority work, was recruited to devise the survey instrument, undertake the interviews, analyse the results and write this report, with Dr Alex Collins serving as the Principal Investigator.

A survey instrument was developed from the original lines of enquiry set out by ICL in response to the project objectives, supplemented by a literature review of over 50 papers exploring GI benefits and obstacles. This took the form of a script with probes, and contained supporting stimulus materials in the form of of two closed card sorting exercises and four showcards. In keeping with the project brief, a slightly longer script was used for project managers. All the stimulus materials were made available in the native language of the participant. A copy of the survey instrument, which includes the showcard contents, forms an appendix to this report.

Interviews were conducted face to face, mostly on council premises. Those present were the interviewee, the interviewer, and any interpreter deemed necessary. The recordings made were professionally transcribed under a contract with appropriate confidentiality clauses; one interview conducted in French was transcribed with professional assistance from a native speaker. Most interviews lasted between 45 and 60 minutes, though some – especially those with project managers, which included additional questions – lasted up to 80 minutes.

An undertaking was given to respondents that nothing they said would be used in a way

- That would identify them as the source
- That would embarrass them
- That would embarrass their authority

To ensure that this commitment is honoured, some quotations in the report have been anonymised, and some verbatim comments amended to convey the sense of what was said without betraying confidences.

1.3.4 Analysis

The interview transcripts were cleaned to ensure accurate transcription of relevant foreign language terms, and uploaded into NVivo 12 software. Each transcript was read carefully, and segments of the respondents' text were coded according to the subject under discussion, and the nature of the response they were giving. The analysis was based on concepts of thematic analysis, usefully summarised by Attride-Stirling.[4] A basic code frame of eleven headline codes was developed from the structure of the survey instrument; this was thus augmented in real time as the analysis progressed by the creation of subsidiary codes ('nodes') to assemble related responses together. These codes were then reviewed to determine which could actually be grouped, and to seek to divide up those with content too extensive to be easily analysed. In the end, a total of 157 codes were utilised to collect and collate the textual data. Our analysis then explored the relationships between the different collections of responses, with subsidiary analysis where needed using the traditional coloured pen approach.

Data from the card sorting exercises was converted into a mean score using the Likert technique. Quantitative counts were also used to analyse the results of one of the showcards. The detail of the approach used is described in the relevant section of the report.

1.3.5 Outcome

A total of 53 interviews was completed between November 2019 and February 2020. Table 1.1 shows the breakdown of those interviewed by each authority involved; in this analysis, a senior officer is defined as a Head of Service or Director level employee of the authority, and an elected member is a Councillor or Alderman.

Table 1.1: Breakdown by rôle of interview participants across partner authorities

Authority	Elected member	Senior officer	Project Manager	Officer	Total
Lille	1	2	1	0	4
Bruges	1	1	1	3	6
West Flanders	0	0	0	1	1
Antwerp Zuidrand	2	0	1	3	6
Antwerp Province	1	0	1	1	3
Cambridge	1	0	1	5	7
Southend	1	2	1	3	7
Kapelle	1	1	1	4	7
The Hague	0	1	1	5	7
Middelburg	0	0	0	1	1
Essex	0	1	0	3	4
Total	**8**	**8**	**8**	**29**	**53**

One of the observer authorities – Essex – does not fit the definition of smaller cities. Care has therefore been taken to see that their input does not distort the perspective of the smaller city that is the focus of the project.

4 Jennifer Attride-Stirling, 'Thematic networks: an analytic tool for qualitative research', *Qualitative Research* 2001: 1, pp. 385-405.

A qualitative research report like this reflects what was said to the interviewer, and reports on the perceptions of the respondent. This is not necessarily the same as objective fact, and there may be instances where respondents' perceptions are inaccurate. This does not however invalidate them as perceptions and opinions, which is how they are reported here.

All the interviews were completed before the outbreak of the Coronavirus. As the questions range across issues such as public health, economic vitality and related matters, it is important to note that responses do not reflect any change in perspectives as a result of the virus, and that all interviews were undertaken within the same prevailing public health and national economic context. Views may, of course, have changed since.

1.4 Observations on methodology

There are some acknowledged issues in the approach taken, especially as regards the sample structure and the selection of interviewees. We would have preferred to have (and indeed encouraged) an even spread of participants across the authorities, but were prevented from achieving this by different structural approaches to GI responsibilities in different jurisdictions, and by the capacity of those selecting candidates to recruit across their organisational boundaries. Nevertheless, we were able to ensure that no one authority could dominate the eventual sample to the extent that it might unduly influence the outcome, and turned some proposed candidates away to prevent this from happening. We also encouraged some authorities to cast their nets more widely and to allow us access to officers who had not been considered, giving us more breadth than originally offered.

We are also aware of the self-selecting nature of the participants. Some potential recruits may have found the timing, or the time requirement, problematic. To minimise this risk, we took active measures to provide as much flexibility on timing as possible within reasonable cost and workload parameters, offering each city partner more interview slots than were needed to provide choice to participants. A further potential weakness, that of language, was addressed using interpreters when necessary, and the provision of stimulus material in the language of the participant. It remains possible that some French, Flemish or Dutch speakers declined participation on language grounds, although when we were aware of this, we took active and effective steps to address the issue.

The relatively large sample size has helped to offset some of these issues, as does the fact that all 53 interviewees are active practitioners in initiating, designing, approving or delivering GI. Although this is not a true structured sample, the numbers involved and the concentration of responsibilities mean that potential bias is diluted. But the numbers open up another temptation: the possibility of using the data quantitatively. By and large, this has been resisted, although a couple of the questions are capable of supporting analysis of this nature, it must be with an appropriate degree of circumspection.[5]

5 The issue of enumeration in qualitative research is discussed by, for example, Joseph A. Maxwell, 'Using Numbers in Qualitative Research', *Qualitative Inquiry* 16 (6), 2010, pp. 475-482. Maxwell sets out the arguments from both perspectives.

Photo: Phil Back

2 Perspectives on Green Infrastructure

Respondents were asked what they would identify as the essential qualities of GI, that make it more than simply green space or planting. The variation in their answers indicate that, while there are some dimensions of GI that are widely understood and appreciated, there is a wide variation in understanding and no standard definition of the terminology. There were some very thorough responses that indicated a high level of awareness, but more rather thin answers that indicated a narrowly defined or otherwise limited understanding. Some saw it as a strategic, complex approach with multiple, sustainable benefits in a range of areas; others saw it in terms of a single aspect such as maintenance, or a passive issue such as productive utilisation of the incidental space around buildings. Some described the inherent qualities of GI, while others focussed more on impact.

This is in itself a key finding in that when people within local government are discussing GI there is no guarantee that they have a shared understanding of the term, or of its benefits. The terminology may be familiar, but understanding may be quite superficial.

> *'My ideas of green infrastructure have changed the more I've read about it... There's lots of different definitions of green infrastructure.'*
>
> *Cambridge*

> *'I think it's still very new to them [political leaders], even though it's been around for years.'*
>
> *Anonymised*

2.1 Qualities of GI

The most well-recognised quality of GI is **multifunctionality**, the idea that solutions for one societal or environmental need can confer benefits in other areas. Half of all respondents gave an answer that might be classified in this way, though some of these suggested a limited understanding of the ideas of multifunctionality. The permutations of benefit identified by respondents are both numerous and diverse, achieving a variety of combinations of ecosystem services, adding value, and integrating different objectives into a single project. This allows a project to have a variety of outcomes, which can help in securing support from funders or communities with different priorities; there may be little money for a biodiversity project, but an allocation of resource behind climate change, for instance. A project supported because of one of its expected outcomes may have valuable by-products in other areas, some of which may have been anticipated while others arise providentially. One respondent describes a tree planting project expected to have multiple climate and environmental benefits, public health gains, and climate change services, whilst increasing amenity. Another describes an unsuccessful recreational space that has become – perhaps through neglect - a haven for biodiversity, and which thus connects local people with nature.

> *'You can use green space in more ways than only grass... it must be of value in playing for children,... for storing rainwater...'*
>
> *Kapelle*

> *'It's giving space for nature, for water, and for tourist possibilities, it's an integrated approach.'*
>
> *Antwerp*

A further characteristic of GI, identified by around half of all respondents, is described in terms of **ecosystem services**. This terminology would not be universally recognised by respondents, but clearly has currency with many, and implies desirable and sustainable outcomes not only for people but also for the wider ecosystem. Green developments provide opportunities to secure ecosystem services either directly, as the rationale behind a project, or indirectly as a secondary gain from a project targeting a particular goal. The difference between GI and green space is thus, for these respondents, the exploitation of the potential of that space to do more than its essential purpose, to achieve not only its immediate aims but also to contribute to higher level goals such as climate change, sustainable drainage, water capture or carbon sequestration. These goals are not necessarily as well-recognised as immediate gains such as play space or amenity, so respondents imply that a process of awareness-raising may be needed to connect these benefits with issues that people will recognise, and to incorporate additional measures into projects to secure them. A tree may simply look nice, and this may be its essential purpose for some people, but explaining its wider benefit for local residents, for air quality, for water retention, for heat stress mitigation, or for biodiversity, may demonstrate an agenda that goes well beyond simple amenity.

'If you only go for the very low... goals, and not try to do something at a higher level..., it's a missed opportunity.'

Antwerp

'Planting a tree... that's [just] the normal work of the gardeners of the city... Working on GI is a way to tell people that we are aware of... environmental issues, and... fighting against things like global warming.'

Lille

Connectivity is also recognised as a characteristic of GI, by around a quarter of respondents, and for some is a critical part of their definition of what GI means. They recognise man-made connections, using footpaths, cycle routes and so on, but some also identify natural landscape features such as streams and watercourses; the network they talk about allows people to move independently of roads and polluted air, offers opportunities for active travel, exercise and health, and gives biodiversity the infrastructure it needs to migrate and to develop new habitats. But the connections are sometimes neglected or compromised, with watercourses placed underground for aesthetic or public health reasons, eliminating much of their potential as connectors; there are respondents who want to see these opportunities restored. The idea of a network also creates opportunities for micro-projects, small-scale and fairly insignificant in themselves but potentially part of something bigger as part of an urban mosaic of space.

'It's like your veins, it's a pattern... [that] serves a purpose... it's something that feeds the urban tissue.'

The Hague

'The idea is to create so many micro-projects that they will mesh together into a network of GI.'

Lille

As the discussion thus far indicates, **impact** is an important dimension of GI, and many respondents limit their definition of the concept to this aspect. They identify four broad areas of beneficial impact from GI: amenity, the economy, the environment and biodiversity, and impact on people.

One of the values respondents associate with GI is that green developments are **more attractive** than their concrete counterparts, and therefore make the city more attractive and amenable for residents. GI thus becomes a way of relieving urban density and the monotony of continuous development and sprawl. But most respondents are looking for more than just an attractive environment, and one of the additional gains they identify is an **economic** one. Attractive places not only appeal to residents, but also to visitors, and contribute to tourist spend. They also have a potential to impact on the economic value of adjacent properties, increasing property values, rental and tax potential.

> *'Nice surroundings, good-looking streets, pleasant to walk in, to live in, good for wellbeing... I'm really in favour of green.'*
>
> *Bruges*

> *'It has a direct impact... on the quality of the surroundings... [and if] houses are upgraded, you get more municipal taxes.'*
>
> *Kapelle*

Biodiversity is recognised by respondents as of value in itself, for instance as part of a wider ecosystem in which the city exists, but is more often mentioned in connection with human life; respondents see value in associating local residents more closely with the natural world around them, not least in terms of health and wellbeing. Nature is seen as a stimulus, and legislation limiting our freedom to damage it recognises this public good. Environmental gains also embrace the bigger, less tractable issues of climate change and its components, the need to respond to extreme weather, and interest in carbon neutrality and other large-scale ambitions now being adopted by local authorities.

As for **positive impacts on people**, these focus especially around the public health agenda, with gains both in physical health through exercise and recreation, and in mental health through exposure to the natural world. Other benefits include separation from traffic congestion, child safety (in using footpaths rather than road pavements), social congregation, play opportunities, shade and temperature relief, relaxation, escaping pollution, securing water supply, and reducing social inequalities (in that green space is normally available to anyone to access).

> *'Communities have good access to [nature]... being able to explore it and to enjoy it, but also to have it on the periphery of their day-to-day lives... to benefit health and well-being.'*
>
> *Cambridge*

2.2 Perspectives of decision-makers

Having offered their own understanding of GI, respondents were then asked whether they believed that decision-makers (senior officers or elected members) in their authority would recognise the definition they had just given. The answers to this question suggest a wide range of understanding.

Some decision-makers are seen as having a good understanding of GI. In some instances, it is the senior officers who are better-informed, but in others elected members are taking a lead. There is a general sense, though, that many councillors are a little behind the curve and still thinking more in traditional terms, rather than grasping GI principles. Several respondents indicate that their decision-makers have a poor understanding of GI and what it can offer. This is attributed partly to political positioning, but partly to a lack of knowledge or awareness, and respondents in these authorities include some who despair, but also others who see a need to educate.

> *'I see... people are more engaged with the idea... see the benefits. A lot of senior officers and councillors can now rattle off the sort of stuff that I have just done.'*
>
> *Anonymised*

> *'These [attributes] are all highly rated. If they understood what these things were, they would rate them all highly... but they don't, because they don't understand them.'*
>
> *Anonymised*

Some respondents indicate that there are people in senior rôles in their authority with a reasonable level of understanding, but who nevertheless have to work with others who do not share this position. These differences may be political, with some parties more naturally supportive of a green agenda and some more naturally sceptical. They may be practical, with green ambition having to confront realities of governing that do not allow total freedom of green action. And they may be operational, with GI responsibilities not concentrated in one operational area, and individual decision-makers not aware of the activities of counterparts with related responsibilities. There may also be differences of view between different levels of government, where these operate.

There are also decision-makers, though, whose words and actions are not consistent with one another. Respondents suggest that awareness is not always matched by decision-making, that major announcements of climate emergency and the like are not backed up by policies that address causes, and that individual decision-makers do not themselves take the actions they ask their residents to take.

In coalition arrangements, trade-offs are common, with some leeway given to proponents of GI in the administration, but a need to strike a balance so that other viewpoints are satisfied. This can mean choosing which battles are worth fighting. In at least two municipalities, advocates of GI have to deal with politicians who are climate change deniers, and whose natural position is thus to block GI spending. In another authority, the popularity and visibility of green and natural installations means that their political advocate is gaining ground electorally, risking interpretation by rivals as politically threatening.

In five authorities, decision-makers are seen by some of their respondents as essentially led by cost considerations. This may take them towards grey solutions, where technologies are more certain, and costs can be predicted more securely. Nevertheless, there are senior decision-makers who are receptive to the more speculative cost savings offered by GI solutions, such as eliminating the potential future costs of a catastrophic flood, for instance, or of alleviating longer-term spending on public health. Others may find the idea of an external contribution, for instance an energy-efficiency grant, or an EU contribution, a powerful argument in favour of a greener solution. There are also decision-makers looking for a return on capital investment, and receptive to proposals that offer reduced costs of maintenance, or other savings or costed benefits. This makes proving the value of GI as against other technologies critical to securing approval.

> *'If you want to get a really easy pass, and if you want the floodgates to open on funding, you go in with my direct approach [based around] financial benefit, because they can't say no to that.'*
>
> *Anonymised*

> *'The Council will declare a climate emergency quite happily...at the same time they will introduce policies that increase car usage. [None of them] ever catches a bus.'*
>
> *Anonymised*

> *'As [a Province] it is important that we can persuade not only [our] administration of the importance of GI, but also the mayors in the local governments.'*
>
> *Anonymised*

Political leadership is of course subject to change, and politicians are often very aware of the nature of their tenure of office. This leads some to look for projects which will generate results that are popular, visible (to citizens and to the media) and achievable within their term of office; by no means all GI projects fit within such a framework. This does not mean that the doors to larger-scale or more complex projects are completely closed, but there may need to be other political advantages such as external funding, public opinion, a strategic commitment, or a national/EU agenda to attract political support.

Linked to the need for visible success is a tendency for some decision-makers to be risk-averse. GI may be seen as an unproven alternative, and costings may be less certain than the traditional methods. Commitment to climate change policies may be difficult because there is a fear that the spend implied may be too open-ended.

There may also be a tendency at senior levels towards a more limited focus, that means that opportunities to add value to individual projects are missed. Thus, a project focussed on active travel may not include the opportunities that exist to improve biodiversity along the route, and (as one respondent notes) may even conflict with existing biodiversity provision. A tree project may win support because trees are a Good Thing, but opportunities to add value through wider benefits are lost to the narrow focus.

> *'Politicians... have a tendency to do things they already know... and maybe not try something too risky or too new. That can be a problem.'*
>
> *Anonymised*

> *'They see a part of it... they don't see the other ecosystem services...for instance, purifying our water...maybe they know that it is happening, but they do not take it as an argument for policy-making.'*
>
> *Anonymised*

The scale within which smaller cities operate may also be a factor affecting decision-making here. Larger cities have whole departments working on climate issues, or greening the city, whereas in smaller municipalities this may be a job undertaken by one person, perhaps even working part-time or with other responsibilities as well. In such circumstances, GI can easily become something of an afterthought, an additional dimension to a project rather than something central and integral. This does not mean green will always be ignored, but it may mean retrofitting within a design, or limiting the potential for GI outcomes in a development.

Planning policies may mandate green elements for certain sizes of development, but smaller scale projects can pass through this type of filter with GI left out of the design altogether, or added in as a token gesture. One authority has a scoring system that would seem to support green components, but this is not enforced, and low scoring projects are often not challenged. Compartmentalisation of responsibilities is also a factor, with green issues confined to one area of the municipality, such as policy, and fighting to be heard in operational decision-making. Because so much GI work is associated with other types of development, securing the profile it merits in decision-making is a challenge. But where green elements are mandated by national policy or legislation, attaching them to or incorporating them into major projects can be an effective way of securing delivery.

> *'Green infrastructure is the last thing developers think about...[and] it's always [in] the corner of the [plot]. It's an afterthought.'*
>
> *Anonymised*

> *'It's given the least thought on projects I've been involved in... the highway, or the footway, or the cycleway... goes in first, and then whatever's left would be grass, [or] or maybe some low-level planting.'*
>
> *Anonymised*

More encouragingly for respondents, there is also a perception of change, in the direction of an increased understanding and appreciation. This is linked to growing awareness of the climate emergency, to political declarations and organisational strategies, to the pressure of public opinion, to the interest and financial resource available through the EU, and to the influence of media personalities such as Greta Thunberg and David Attenborough. Change is not necessarily rapid, but even slow steps in the right direction are viewed as progress. In one municipality, it has meant elected representatives getting out of the town hall and experiencing cycling in the city for themselves, or being shown some of the practical issues officers are working on.

Change is also occurring at a higher level, in the way GI projects are presented and appraised. As climate issues become more potent, they are moving from being an abstraction, an academic issue, into the political foreground and the arena of visible change. This is a work in progress, though, and

several respondents suggest that it is still easier to gain support for a tangible, visible project than for one whose goals are less easily measured or appreciated. Some ecosystem services such as public health and biodiversity may struggle for prioritisation against more tangible outcomes. Signs exist of a shift away from mitigation strategies and towards a more positive adaptation agenda, but this will largely depend on officer awareness and project design rather than being led from above. And there are indications that some of this change is being driven from within, with decision-makers recognising the expertise their officers have and consulting them more often on greener approaches.

> *'I have a new policy plan, concerning space and spatial planning... but it takes time... it's step-by-step, but some politician has to take the decision to start taking those steps.'*
>
> *Anonymised (Politician)*

> *'It is definitely increasing... They're interested, all of a sudden... they're start[ing] to join the dots.'*
>
> *Anonymised*

> *'Two years ago, I was the only voice among councillors... now I have the support of the Mayor and other councillors... [it's] becoming more and more important in the city.'*
>
> *Anonymised (Politician)*

2.3 Public opinion

Around half of all respondents identify a groundswell of public opinion demanding action on climate change and greener policymaking. Social media has had a large part in this, by making it easier both to complain and to build support behind a complaint, to the point where politicians feel they have to be seen to respond. Traditional media too plays its part by relaying stories about plastic contamination, bushfires, and unprecedented flooding. Newer action groups such as Extinction Rebellion have raised the profile of climate issues, as have Greta Thunberg's children's protests. Not all politicians are receptive to these pressures, but they are not so easily dismissed.

A further major influencer of public opinion is the occurrence of an actual extreme weather event, or unpopular environmental action by the authority. Summer heatwaves have caused distress in Flanders, to the point where politicians are receiving complaints. Congestion and road safety in Antwerp are such significant issues that social media are redolent of complaints and bad experiences. Tree removal in Southend proved so unpopular that activist groups formed to protest against it, to the extent that work had to stop.

Not all public opinion leads in the same direction, however. Some people support green ideas in principle, but resist change that might affect their own situation – for instance, they want less congestion, but still want to drive their own cars; they like biodiversity in principle, but don't want uncut grass, and don't welcome all wildlife; they like the idea of permeable surfaces, but think asphalt looks nicer and is easier to maintain. Public opinion is not always completely reliable as a support for GI, and is not necessarily well-informed on the issues it is noisy about; but it is becoming part of everyday political life, and demanding a response.

'Society's understanding of the need for GI, biodiversity loss, and climate crisis, there's a lot of pressure on decision-makers now and that has really... upped the ante.'

Anonymised

'Citizens are more direct now, they interrogate their representatives, they have become more demanding... Councillors have become more aware of [this] and the way the city is managed is changing to be more responsive.'

Lille

'The group is growing now that says we have to change; we have to do something. But it's still fighting the other group that says, well... we're just the Netherlands, we're so small, and what difference does it make.'

Anonymised

2.4 External stakeholders

Alongside the general public, there is also pressure exerted on decision-makers by external stakeholders, often people able to influence at the higher levels of the local authority, and often to the disadvantage of GI ideas and proposals.

Respondents identify the local **business community** as a powerful lobby group in Southend, and in Bruges. In Southend, this lobby protests vigorously at any threat to parking space, as a potential erosion of the visitor business on which the local economy depends. Plentiful car parking is thought to be a more important aspect of Southend than an attractive town centre. This attitude, and the influence this lobby has on decision-makers, is a serious obstacle to greening projects that affect parking. Similarly, a business lobby in Bruges is recognised as influential and resistant to measures to reduce car access to the historic city. Ghent has successful pedestrianised zones, but these have been resisted in Bruges.

However, respondents note that it is not just businesses that argue the case for the car. **Car-owners** themselves are often highly motivated to ensure their particular desires are met, and may have loud voices. Several Dutch respondents see car owners as having a strong desire to be able to park in front of their homes and see their cars from their front windows. They want more, not less, parking space, and are reluctant to trade this away for the sake of GI. UK respondents note that parking space has led to the loss of front gardens to concrete, and that nobody in Britain has tried the car-free residential models used elsewhere in Europe.

Landowners are often influential, especially at a local level, and can be problematic with projects that cross their property, even if the project has a legal right to do so. By taking the project sponsors through an appeal process, they can delay a project and increase costs. Having the ear of prominent politicians, they can also make progress very difficult. There are also tensions between the agricultural lobby and local authorities over environmental policies that conflict with food production, take land out of production (as in the Schelde estuary, where polder is being given back to the sea), or restrict the use of fertilisers and pest/weed control.

Environmentalists might be thought to be more likely to support green initiatives, and some are organising themselves into coalitions to pressure city authorities to act on climate-related issues. But some environmental partners can still be problematic in implementing projects. Voluntary groups managing vulnerable sites may not welcome additional visitors and the need to provide for and manage them. Some environmentalists may view trees as sacrosanct, so that proposals that require removing them (including old, diseased or unsafe trees) may be opposed vigorously. Residents may like street trees in principle, but may not want their leaf litter or bird poo on their cars, or to have their front rooms in constant shade.

A more formal, and (according to respondents) perhaps more formidable, difficulty arises with **UNESCO** and the designation of World Heritage Sites. Bruges and Lille are UNESCO World Heritage Sites, an important designation in terms of attracting tourism and a badge of honour for the cities, but imposing quite severe constraints on freedom to act. Thus, in Lille, the designation works to prevent planting trees in the Grande Place, even though this would mitigate adverse climate effects, because Lille is 'the Mineral City' and its greyness is part of its essential character. Bruges also struggles with similar restrictions in relation to introducing green elements in the city centre.

'Southend still has a daily local paper... and it's always screaming for more car parking spaces, because if we get more car parking spaces the High Street will stop dying.'

Southend

'They just say, well, I want to park where I want, and I want to go where I want, and my car is holy.'

The Hague

"Some of our [Councillors]... just see the green agenda as greenwash... [it's] not as important for them... it's just seen as there to stop things [of benefit to farmers] happening.'

Anonymised

Photo: Shutterstock

3 Green Infrastructure Priorities

3.1 Overall assessment

Respondents were given a set of twelve cards, each of which had on it a potentially desirable outcome of a GI project. They were asked to organise the cards into three groups, according to whether they thought the benefit on the card would currently be highly rated by those who make decisions about GI in their city, would have only some importance, or would not be thought very important. The results are thus an indication of the perception the respondent has about their city's priorities in GI, and not their own personal priorities.

Points were awarded to each response, with high priorities scored at 2, issues of some importance scored at 1, and non-priorities scored at zero.[6] The total scores for each card were then averaged to generate mean scores (Table/Fig. 3.1).

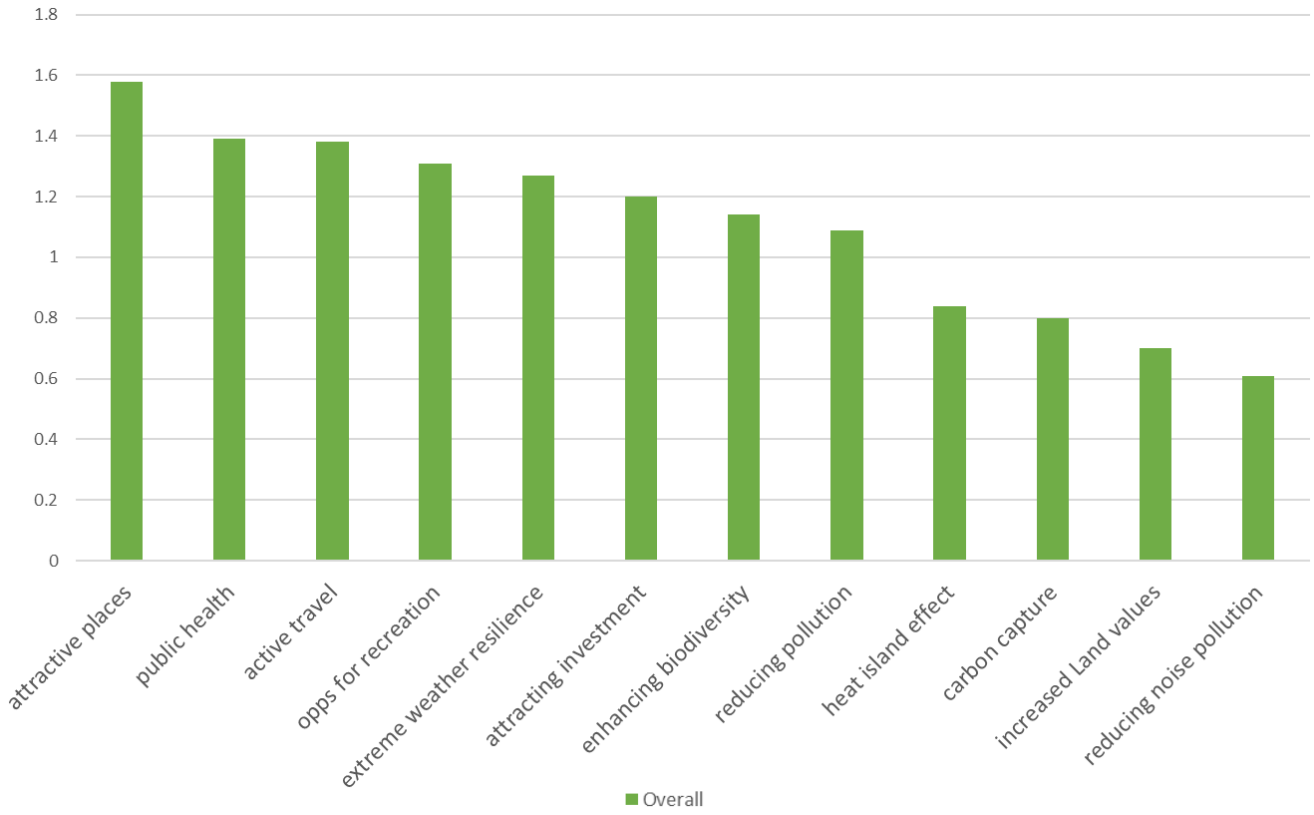
Table 3.1: Perceived GI priorities: Mean scores for all respondents

GI priority	Mean score	*Standard Deviation*	Times as high priority
More attractive places to live	1.58	*0.57*	32
Improved public health	1.39	*0.67*	26
Supporting safer active travel – walking and cycling	1.38	*0.68*	25
More opportunities for recreation	1.31	*0.77*	26
Resilience to extreme weather	1.27	*0.69*	21
Attracting new investment	1.20	*0.83*	24
Protecting and enhancing biodiversity	1.14	*0.74*	17
Reducing pollution	1.09	*0.77*	18
Reducing the 'heat island' effect	0.84	*0.71*	8
Carbon capture	0.80	*0.79*	11
Increased land and housing values	0.70	*0.79*	10
Noise reduction	0.61	*0.69*	6

N ranges from 51 individual scores up to 52

6 A mean score of 2.0 would indicate an issue ascribed universal priority across all respondents. Any score above 1.0 indicates an issue that is being given at least some priority across this sample, and a score above 1.5 indicates a priority that is widely shared. In contrast, a score below 0.7 indicates an issue which is only rarely seen as being prioritised. Cards not assigned to a priority are not included at all in the calculation, nor are those from one respondent who insisted on presenting his own priorities.

Figure 3.1: Perceived GI priorities: Mean scores for all respondents



Although all the benefits on the cards have some priority allocated to them, some are considerably more important than others. No benefit is universally a high priority, but there are nevertheless some shared perceptions across many respondents, and between municipalities. The highest priority is assigned to **attractive places to live**, indicating that this is currently perceived as the most sought-after GI benefit across the participating authorities. High priorities are also attributed to **improved public health**, and to **active travel**, the promotion of walking and cycling. **Resilience to extreme weather**, which might be considered one of the main ecosystem service gains from GI, is only the fifth highest priority in this sample, with amenity and people-focussed benefits emerging as more important overall.

Other priorities scoring above the mid-point of 1.0 include the attraction of **new investment**, protecting and **enhancing biodiversity**, and **reducing pollution**, which was most often understood as air pollution. It is interesting that improved public health attracts a much higher overall score than one of its major components in the form of ambient pollution, suggesting that the detail of public health is not as well recognised as the principle.

Four GI benefits attract noticeably lower scores overall. The lowest score is assigned to **reducing noise pollution**, which over half of all respondents rated as not a priority at all. The **increased land values** which can accompany the implementation of GI projects are also not a current priority, and nor is **carbon capture**, while the **heat island effect** is only really prominent in locations where excessive heat has caused serious problems in recent times.

Observations about missing cards centred on the cultural dimension of GI, water storage, and parking. It could be argued that these are embraced by ideas already on the cards, however, and the absence of these issues did not prevent them from being raised in the discussion that followed the exercise, reported below.

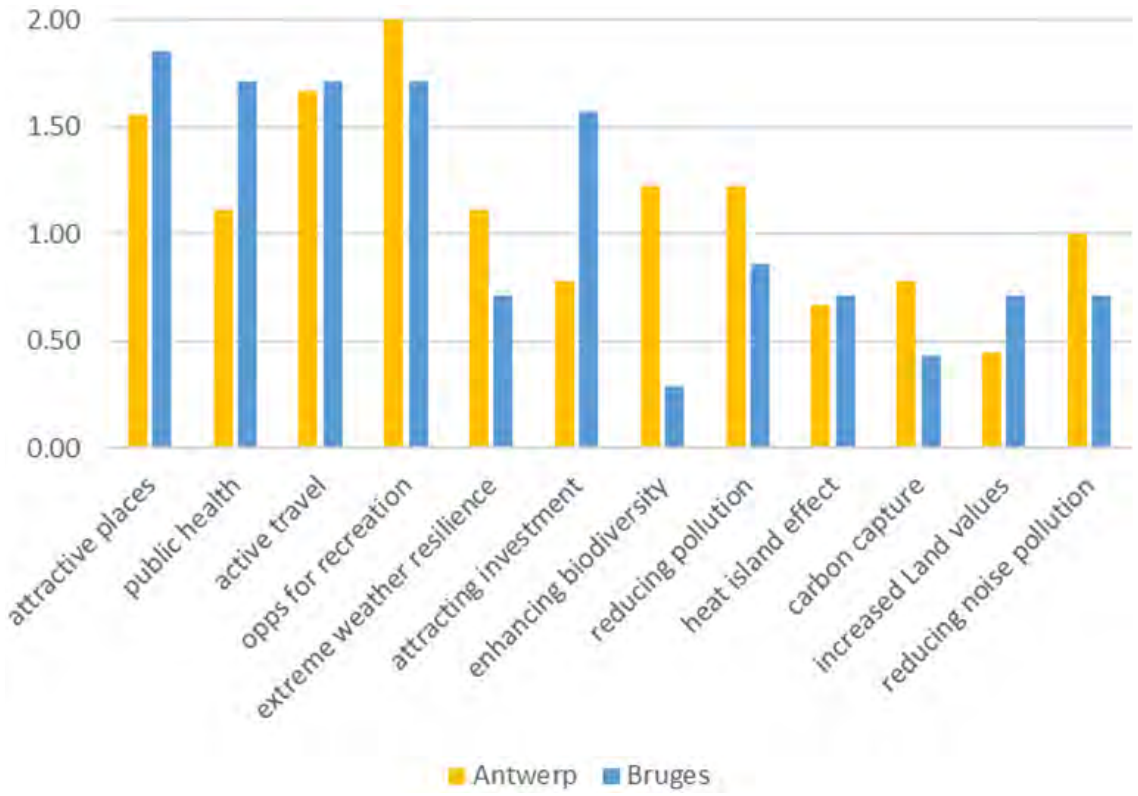
3.2 Variations by country, city and rôle of respondent

There are some interesting variations in these results according to the country concerned.

Belgium has the same four GI attributes at top of its overall table, but in a different order, with opportunities for recreation at the top and with a very high score of nearly 1.9. Active travel is also a higher priority in Belgium than in the sample overall, reflecting the issues caused by traffic in Antwerp and Bruges, and the focus on active travel in the Zuidrand as a major outcome of the GI pilot there. Noise pollution also attracts a higher priority in Belgium, albeit still ranking below many other GI benefits. In contrast, Belgian respondents perceive a lower priority given to biodiversity, extreme weather, the heat island effect and carbon capture.

The results for the Belgian cities are shown in Fig. 3.2.

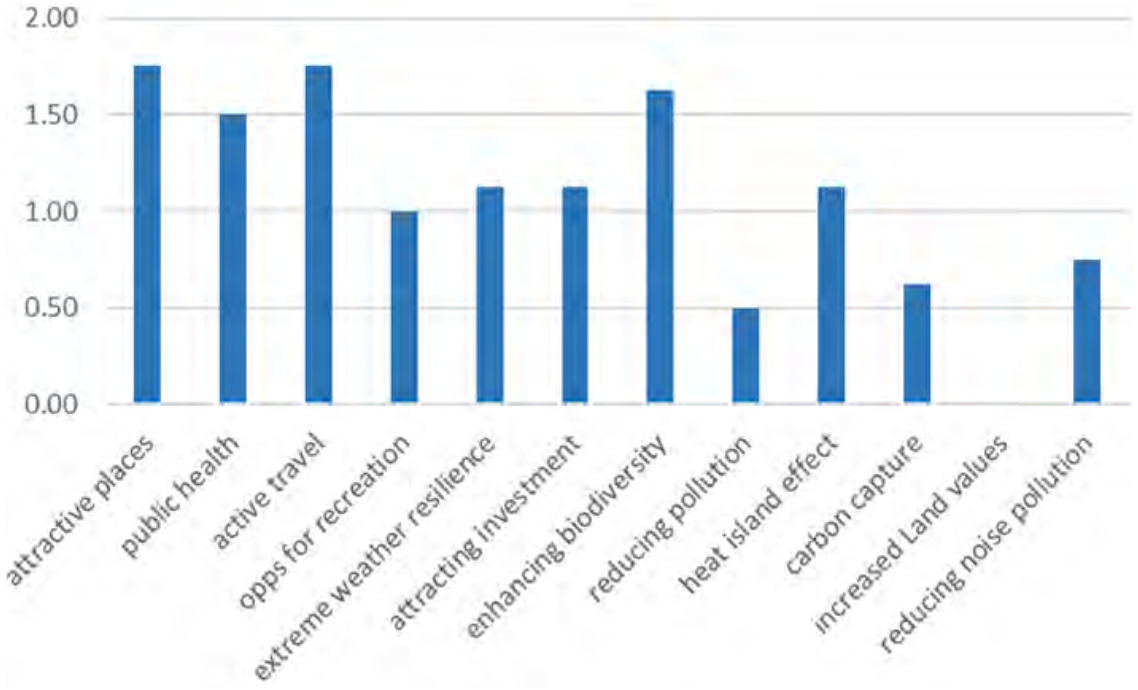
Figure 3.2: Perceived GI priorities: Belgian Cities



Many of the scores are similar between the cities, but there are some noticeable exceptions. Both cities prioritise an attractive place to live, active travel, and recreation, and neither attaches great importance to the heat island effect, noise, carbon capture or increasing land values. But Bruges places a greater emphasis on public health and attracting new investment, while Antwerp is more exercised by resilience to extreme weather and by biodiversity.

The sample in **France** is very small and must be viewed with circumspection, but shares three of the top four overall priorities (Figure 3.3).

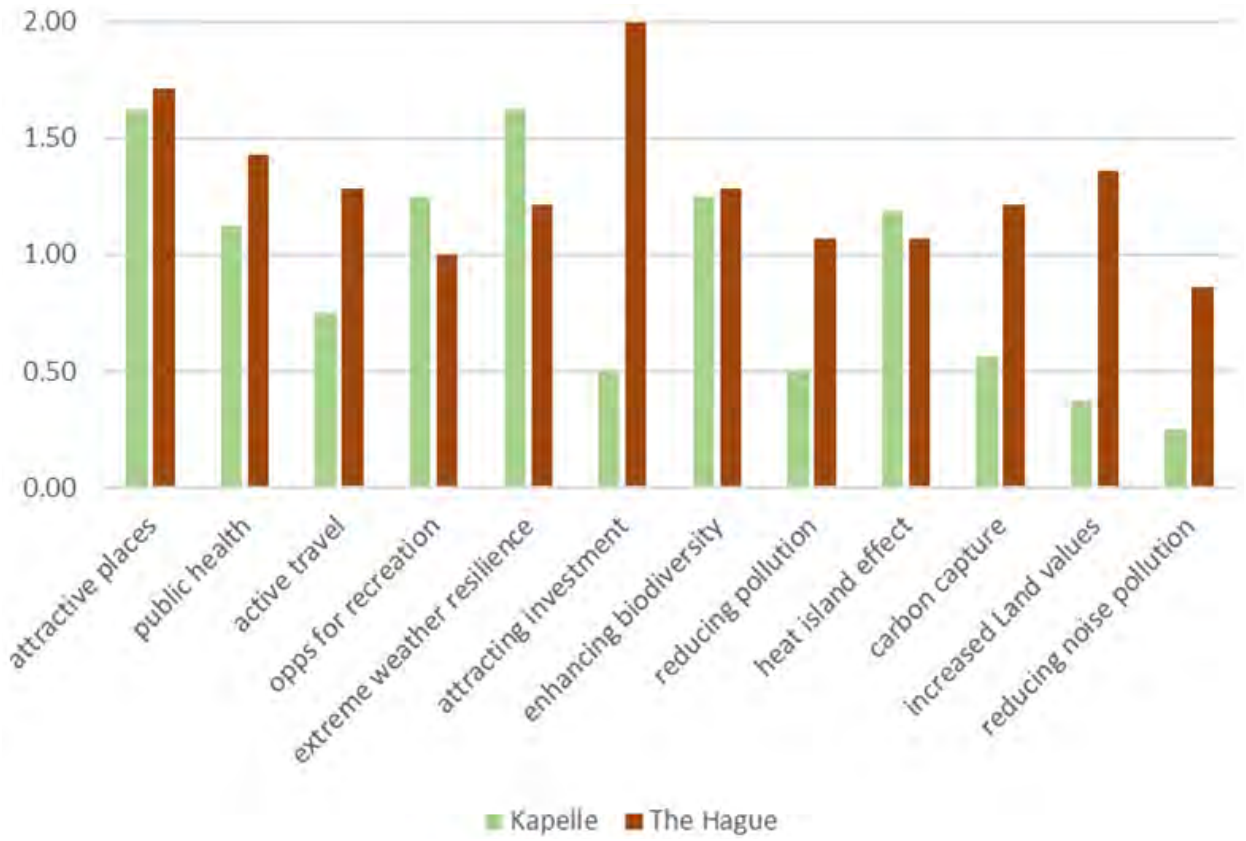
Figure 3.3: Perceived GI priorities: French Cities



A key difference is a lower priority for recreation, while biodiversity attracts the second highest score in Lille. Active travel also scores strongly in Lille, and so does the heat island effect, unsurprisingly given the experience of the city in recent times. Land values have no priority at all in Lille (score of 0), and reducing pollution is also not being prioritised to anything like the extent in other municipalities.

The results in the **Netherlands** show significant variation from the overall results. The highest priority here is attractive places to live, but with a higher score than the overall result, and resilience to extreme weather is also a greater priority here. Improved health is a significant priority, but active travel is well below the overall level (it is seen as largely already provided for), while biodiversity is the third most important dimension of GI, and the heat island effect also scores well. Noise and pollution, on the other hand, do not play nearly as strongly. There are also differences between Dutch cities (Fig. 3.4).

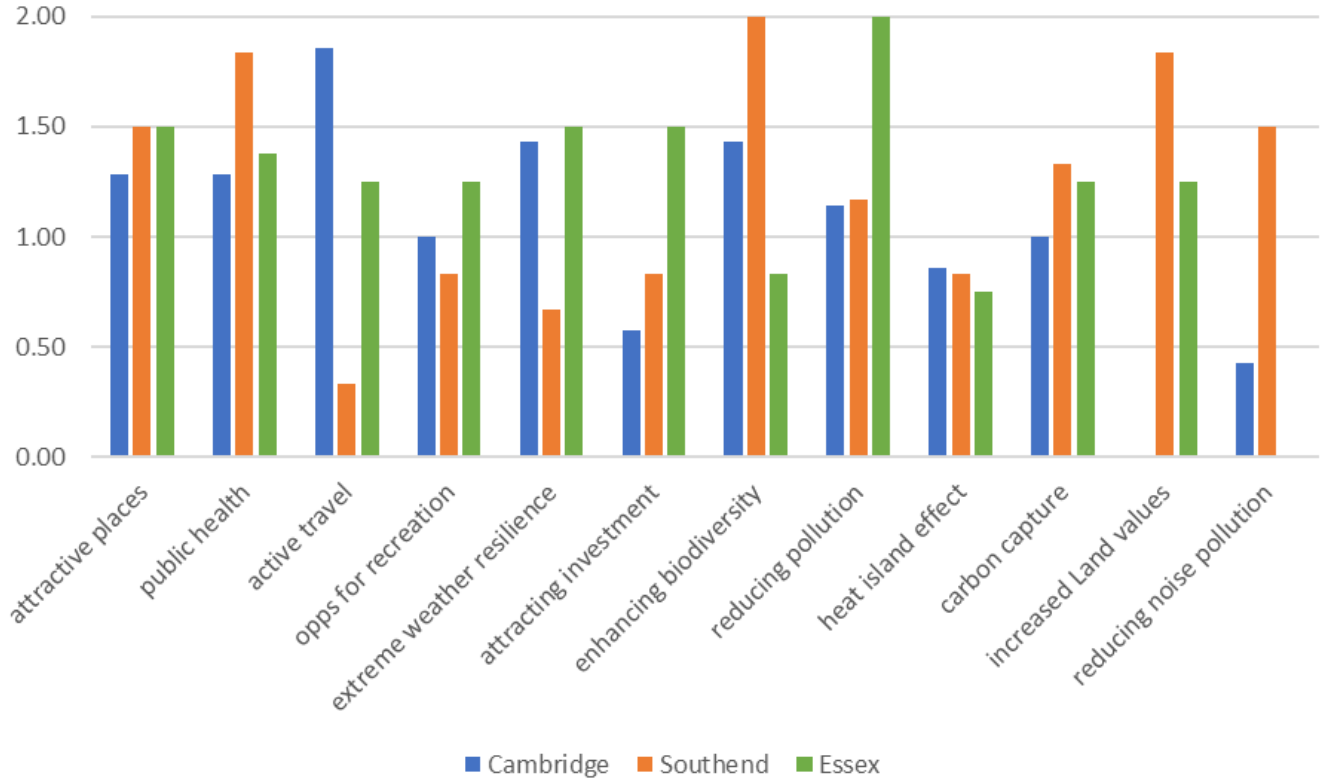
Figure 3.4: Perceived GI priorities: Dutch Cities



In the urban area of The Hague, active travel, carbon capture, noise and land values all score much more highly, and attracting investment emerges as exceptionally strong in the city. The rural community of Kapelle, on the other hand, emphasises recreation and resilience, alongside an attractive place to live, and applies lower scores generally to many of the potential gains from GI.

There is also a substantial variation evident in the **United Kingdom**. The highest scoring issue overall in the UK is reducing pollution, followed by public health and resilience to extreme weather, and with active travel also scoring strongly; attractive places also score reasonably well in the UK, but lower than the overall level. Investment and increased land values score marginally better in the UK than overall, but the differences are not especially marked. In contrast, recreation is a much lower priority in the UK, as is the heat island effect; noise pollution barely figures at all as a priority. Fig. 3.5 shows the UK results at city level.

Figure 3.5: Perceived GI priorities: UK Cities



Southend attaches greater priority to public health and to biodiversity, and places slightly greater emphasis on an attractive place to live and on carbon capture. But the major differences in emphasis for Southend lie in increasing land values (which, unsurprisingly, Cambridge does not prioritise at all) and in noise pollution. Cambridge, in contrast, places vastly stronger emphasis on active travel (which is hardly a priority at all in Southend) and on resilience, and is less driven by attracting inward investment or reducing noise pollution.

Essex is perceived as prioritising pollution more highly, alongside attractiveness, resilience and investment.

3.2.1 Variations by responsibility

Elected members (**councillors and aldermen**) tend to give higher scores across the board, suggesting either a greater sense of priority than their officer counterparts, or a reluctance to admit that GI-related issues are not the priorities they could be. The difference is especially marked in relation to noise pollution, where elected members assign a higher priority than is recognised by officers. They are also more likely to indicate priority for recreation, resilience and biodiversity. **Senior officers** tend to rate issues in similar way to their less senior counterparts, but attach higher priority to pollution and carbon capture, and a lower priority to biodiversity. **Project managers** see very little priority being given to pollution, a view that differs significantly from senior officers and elected members, and they are also much less positive about increased land values and carbon capture. These differences suggest a degree of cynicism, or realism, among paid officers in contrast to those who lead, or provide the public face for, their organisations, and who perhaps are more aware of the bigger picture, or more sensitive to appearances.

3.3 Discussion of card placement rationale

Respondents were invited to explain the rationale behind their placement, especially where these seemed contradictory or where explanation seemed desirable. This section sets out the results of these discussions, and thus illuminates the background to card placement.

3.3.1 An attractive place to live

A more attractive place to live is the most important priority overall, with three in five respondents perceiving it as among their authority's highest priorities; but it clearly means different things to different respondents, since they interpret their municipality and residents' views in different ways. For some, it is simply the amenity value of a pleasant environment, which is valued in itself or as relief from an otherwise hard-edged urban environment. Equally, those who seek this kind of relief in locations where priority is being given to development are likely to give this a low rating which they criticise. There are also some who view their environment as already attractive, and who are resistant to any intervention that might threaten this agreeable status quo.

Others see added value in the opportunities that an attractive place offers, for instance in relation to physical activity, more environmentally friendly travel, enhancing biodiversity or promoting social contact and community, especially in relation to areas with limited outside space. They note that an attractive place can be much more than simply something nice to look at. These added value elements are generally focussed on the benefit to people, however, rather than on any other ecosystem services that might accrue.

There are others who see an attractive place as a magnet for attracting new people into the locality, improving retention of the people who already live there, or encouraging them to use an area for social and economic gains that might otherwise go elsewhere. The economic dimension of this is also recognised in some quarters, and presents itself in support for local business, investment, and increased tax revenues. But there are others who note that this is not always the priority when a development is taking place, or that their area is already sufficiently attractive to allow other priorities to take precedence.

The results suggest a strong potential relationship between an attractive place to live and GI more generally. As a high priority for many decision-makers, GI projects that can also be shown to be increasing attractiveness to humans will have a better chance of being approved, or will at least be harder to turn down; in some cases, making attractiveness a primary emphasis may secure more support than the real reason behind a proposal.

'Hopefully, [we'll] increase the amount of time people want to spend there... people will want to sit, eat... look at the vegetation, look at the birds... which would hopefully help those businesses.'

Southend

'Kapelle is already an attractive place to live... most people want to keep it like that.'

Kapelle

'Attractive means space to play, spaces to recreate, spaces to walk and run...'

Bruges

3.3.2 Improved public health

About half of respondents see improved public health as a high priority in their city, and most of the rest rate it at least in the middle group of priorities, making it the second highest priority overall. But, like some other GI benefits, this does not mean it attracts the attention or resource that a high priority might suggest. It is noticeable that, while public health in the abstract is highly rated, outcomes that might contribute to the public health agenda such as active travel, extreme weather or pollution do not always attract the same attention. Some respondents attribute this to inconsistency between words and actions on the part of decision-makers, while others suggest that the relationship between public health as an abstract term and the components that contribute or detract from it is not well-recognised, so that issues are siloed rather than addressed holistically. For instance, one municipality has a high-profile health agenda that is linked to work on poverty and social exclusion, but which (as the respondent sees it) has little or no relationship with GI. And yet GI projects could, and perhaps do already, contribute under this heading as well as in environmental terms.

In other authorities, though, things happen the other way round; public health benefits derive from projects aimed at other problems. So, for instance, an active travel project may be focussed on public safety, but is recognised as having spin-off gains in wider public health, while a project focussing on an attractive place to live may also have a spin-off in mental health, because of the inclusion of green elements or biodiversity. This type of project also has the advantage of being deliverable relatively quickly, and being very visible, both factors that have much greater appeal to decision-makers than the more abstract, long-drawn-out and difficult to measure benefits to morbidity and mortality rates.

Against this background, it is interesting to see how Southend is approaching this subject. The authority has recognised the connection between deprivation and health inequalities, and has demonstrated to decision-makers that these impact on costs, which has led to a more holistic process in major development projects and a very clear rôle for GI as part of the solution, not only for physical health

but also in mental health. This is a radically different approach to the more passive stances taken elsewhere, where public health gains happen almost as a by-product; In Southend, public health is front and centre and part of the negotiation and design of new development in the Borough.

Elsewhere, the connection between GI and public health is less well-recognised, but does nevertheless exist. And since many authorities are prioritising public health, at least in the abstract, and because they covet visible results in this area, projects that may have their origins in other GI gains can benefit from showing how they fulfil elements of the public health agenda as well. In GI projects creating recreation space, or active travel, or reducing pollution, the case is self-evident but nevertheless seems to need to be made, and the link between green-ness and mental health is also a connection that can be used to demonstrate a contribution to a concept some municipalities may be struggling with.

> *'In the discussions they say [health] is very important, but... how to manage it, that's still at the beginning.'*
>
> *Anonymised*

> *'GI, particularly for mental well-being, has got huge potential which we ... are not quite recognising and investing in as we should.'*
>
> *Cambridge*

> *'Right now, everybody's focussed on public health because that is our single biggest rising cost, that's the biggest thing. All of it, especially mental health, but all of it.'*
>
> *Southend*

3.3.3 Safer active travel

There is no controversy over the desirability of safer active travel; almost every municipality attaches importance to this, and half of all respondents saw it as a high priority for their municipality. While six respondents suggested this was not a priority locally, three of these explained that this was because they already have highly satisfactory networks for cycling and walking in place. This is a particular characteristic of some Dutch cities where cycling has even become a key cultural indicator used in Dutch tourism marketing.

Elsewhere, there is a general agreement on the need for and desirability of modal shift, but there are differences of opinion on the motivation behind this. For some authorities, it is part of a strategy to reduce traffic congestion; for others, it is a means to deliver personal benefits to those who participate. In Antwerp, both factors are identified as motivators for this policy. Safety was mentioned on the card, and is clearly an important dimension of this policy, but other gains are identified, including exercise, personal health and well-being, and air quality improvements. Cycling routes are also often associated with wider environmental infrastructure that can support biodiversity, but this gain is sometimes diluted; there are tensions between the needs of cyclists and wildlife, for instance in relation to lighting of cycle routes which can compromise bat activity, and the installation of cycle routes can also mean removal of greenery to make space.

The biggest problem in relation to delivering safer active travel is the reluctance of people to make the modal shift, and the consequent need to ensure that provision for cars is retained and protected from encroachment. In an urban environment, segregation of cycling can mean compromising space for vehicles, and this has proven difficult to achieve; the problem is not a resistance to walking or cycling, but a reluctance to reduce provision for motorists. These dilemmas are usually resolved in favour of the car.

There are also differences of opinion as to the extent to which a verbal commitment to safer active travel is translated into positive action. Strategies may exist, but this does not necessarily mean they are implemented, or resourced to the necessary level to deliver real change. In at least one city, there is a shared view that the strategy has proven ineffective because of a reluctance to challenge car provision; as a result, although cycle routes exist, they are seen as dangerous. There is also a perceived reluctance on the part of the authority to support extension of the cycle network despite a policy commitment that promotes this.

Active travel solutions are recognised as having spin-off benefits in areas like public health, carbon footprint, recreation and pollution, as well as more directly in terms of exercise and congestion mitigation, and are a type of GI investment than can be presented as having multiple benefits, any one of which can be promoted to the top of a business case to assist decision-maker approval. These projects can also be delivered fairly quickly (acknowledging that there are sometimes complications) and are highly visible, adding to their appeal to politicians.

'They've done a walking strategy, but it seems to be taking a long time... it's not supported with the budgets [that go into] road building.'

Anonymised

'That's very important, to get more people walking and cycling...but of course, we also want the city to stay accessible by car.'

Bruges

'They really try to make a priority of those walking and cycling networks, and prioritise them above the cars...it's accepted in the Netherlands, we cycle everywhere.'

The Hague

3.3.4 Recreational opportunities

Around half of respondents said this was a high priority in their city. Opportunities for recreation are presented as largely self-explanatory and respondents do not expand on them in the same way as some other GI benefits. Some authorities have exceptionally good levels of provision and others identify deficiencies or inequalities between different areas of the city – a particular issue in Lille. Cambridge as an expanding city is prioritising recreational planning within its new suburban housing areas, but The Hague's development is primarily in the city centre and expects recreation to be provided for these new residents through existing large-scale green space elsewhere within the city envelope. Land availability and land-use priorities are significant determinants of this type of provision.

Some respondents identify specific types of recreation they accommodate, or wish to promote, such as opportunities for exercise, dog walking, children's play, community activities and events. But there are problems too. One is the ongoing maintenance requirement, a particular problem in the UK apparently, while the other is the erosive effect of large numbers of users, a consequence of rising population densities and limited opportunities.

Several respondents note the potential for securing added value from recreational space. This includes biodiversity, but also the associated gains through utilising corridors to create networks that are more than the sum of their parts. Elsewhere, Kapelle is upgrading its children's play areas, and thereby seeking to give children more reasons to play outdoors, and more diverse choices such as trees either for climbing or fruit-picking.

Recreation emerges in the interviews as of value in itself as a GI gain, and as a potential contributor of other GI benefits, but also as potential added value for other types of GI project. Like active travel, it is a multifunctional aspect of GI that can be presented in different ways, and with different priorities, to different audiences. But it can also be a double-edged sword; the more successful a recreation space is, the more pressure it puts on its own environmental and amenity qualities.

'There is a huge pressure on green spaces for recreation. There is not enough to give everyone their space.'

Bruges

'If we want... children to come outside we must provide them with areas where they can safely play... how bad is it if they climb a tree? That's what I like to see.'

Kapelle

'We're creating some really good spaces in our growth areas, big, new... open spaces, some good habitats'

Cambridge

3.3.5 Resilience to extreme weather

Two in five respondents believe this is a high priority for their authority. Extreme weather resilience is not uniquely about flooding, but centres around this issue; three quarters of those commenting on this issue mentioned flooding. Different municipalities experience flooding from different causes, due to their different geophysical characteristics and their existing infrastructure, but most identify it as an issue in dealing with excess rainwater causing damage to properties and other disruption. In some municipalities this can be quite frequent, or quite localised in areas especially susceptible to flooding, but even in less flood-prone areas there have been events that have driven this issue up the agenda, with floods of an intensity previously considered rare.

Rainwater is only one dimension of the issue, however. Coastal communities are vulnerable to tidal surge, so governments in Flanders and the Netherlands have acted already to strengthen coastal defences, and Essex has an awareness heightened by past tragedy still in living memory. Cambridge's river has burst its banks at times, and the canals in Bruges can also overflow. Southend faces the

dual problem of rainwater run-off and tidal surge, which can happen simultaneously, but such is the importance of the beach to the local economy and identity that there is resistance to measures to address the effects of the tide or to adapt to sea level change. Both the UK authorities also identify problems with drainage infrastructure that was designed to cope with much smaller volumes of water and which is now itself a contributor to the surface flooding problem.

In contrast to the excess water, there is relatively little made of the opposite effect of extreme weather, namely drought or water shortage. This has been severe enough in one municipality to require restrictions on use of water, but generally is not nearly as prominent an issue. Storm damage, wind events and snow are also mentioned but are not a focus for resilience policies.

And in spite of the obvious evidence of a potential problem, or a recurrence, from one or other of these causes, respondents see a degree of unpreparedness or even reluctance to confront the issue. One city developed an action plan, but this foundered on a lack of interest from the city's politicians, partly due to short-termism. Maintenance costs are obstructing the provision of swales in another city, where the difference these could make is obvious to at least one respondent. New developments are being built without sustainable drainage, and there is a suggestion that an extreme event is needed to convince local politicians of the need to prioritise resilience.

Nevertheless, some progress is being made: one city has introduced rainwater capture standards into its planning conditions for new development. Another has piloted stress testing for extreme weather, to explore the need for action. Planting is under way in some localities to slow the flow of rainwater and to absorb some of the moisture, while NSCiti2s projects are piloting permeable road surfacing (Kapelle) and water retention and re-use (The Hague).

'We always say, "never waste a good crisis". It's a pity, but mankind learns by [making] mistakes.'

The Hague

'We used to fear the sea, and now we fear the sky.'

Essex

'There was a local newsfeed on Facebook which showed a map of Essex in 2050 which showed most of Southend underwater.'

Southend

3.3.6 Attracting new investment

Attracting new investment is identified as a high priority by around half of all respondents. The link to GI is a little more tenuous, however, and the investment imperative exists independently of GI in many authorities. Nevertheless, there is a general recognition that an attractive place will attract new businesses to relocate and provide attractive environments for their employees to live in.

Several different types of investment are identified. In some municipalities, the priority is employment, and the economic gains that come from business investment. In Kapelle, there is pressure to allocate land for a new business park, an opportunity for jobs and additional tax revenues that is also coveted by the city's neighbours. The Hague is seeking to develop a service industry base, but is also aware of the need for employment opportunities for lower-skilled workers.

Housing is an investment priority in some localities, and in densely urban areas this can put pressure on existing open space and existing GI. In The Hague, the pressure for housing is intensified by Government incentives to build 50,000 new homes: the investment is coming in, but it is private sector funding for developers, and it is not linked in any way to GI - rather, it is seen as potentially reducing GI opportunities. Essex is also actively pursuing external funding, in this case through grants, and with greener motivations.

A third area for investment is in tourism, which is a substantial contributor to the local economy in some NSCiti2s cities. One city sees potential in a new football stadium, building on the success of the local club internationally, but respondents are vague about developing infrastructure for tourists and do not see a need for extra green space or biodiversity spaces in tourist areas that are already attractive; nor do they mention hotels or other leisure opportunities. The link to GI here is especially weak.

A fourth dimension of investment is the attraction of start-ups and entrepreneurs. Here the connection is strengthened by the desirability of working in, and recruiting into, an attractive and socially responsible context which will appeal to the calibre of employee that start-ups may seek. In Southend, GI is seen as having the potential to transform an otherwise difficult airport site into an attractive workplace location where the GI attributes may even enable a rent premium to be sought.

Interestingly, no respondent identifies any investment possibility linked to retail. Only in Southend is this mentioned at all, and even there only obliquely, where an improved town centre might be more appealing to residents and visitors.

One NSCiti2s city, Cambridge, has very little difficulty in attracting new investment, due to the local talent pool, and the attractiveness of the city. Business space in Cambridge is in high demand, and the types of company seeking to relocate there want an attractive environment, creating a strong link to GI possibilities in new business parks, and perhaps attracting larger, world-class businesses to invest for themselves in GI, as a CSR-related contribution to a richer and healthier hinterland for the city.

'We're very fortunate, and we get that [investment] without really having to try.'

Cambridge

'Young businesses, entrepreneurs...will have a high feeling for social responsibility...We feel that including [green] technologies into the building will help... something ...quite difficult to market.'

Southend

'If you can start your business in a beautiful setting, it's always better than to do it on a grey industrial brownfield.'

Bruges

3.3.7 Biodiversity

Biodiversity's place in this ranking is an average placement with fairly even numbers of respondents placing it in each of the three priority categories (one in three gave it a high priority, one in three some priority, and one in three said it was not a priority for their municipality). Respondents' views on biodiversity vary widely, in line with their prioritisation of this issue. In some authorities it emerges as very important, and is backed by both public opinion and by formal commitments, including in one municipality a declaration of a biodiversity emergency. Some respondents also see an increasing recognition of the value and importance of biodiversity, both in itself and also in terms of what it offers humans. The press has noticed this in one municipality, commenting on a change of tack taken by the mayor in a press conference.

However, there are many respondents who identify a mismatch in this area between what their authority says, and what it does. The value may be recognised or acknowledged, at least at officer level, but there are limits to the authority's capacity, or its commitment, to act. A points system for biodiversity has been introduced by one authority as part of its planning process, to encourage developers to include measures in their proposals, but it is proving ineffective.

There are also considerable tensions in implementing biodiversity initiatives. An in-principle desire to see wider biodiversity may accept some species but be resistant to others: birdsong may appeal, but bats or mosquitos may not. Tree felling, even for valid reasons such as disease, has prompted protests and political reaction in at least two municipalities. Farmers may see production and crop yields as more important than bio-diversification, and may therefore resist biodiversity approaches in the countryside around cities. People still want to pick wildflowers, or use pesticides in their gardens. And even with GI-related projects, biodiversity can be compromised, for instance where cycle path creation can threaten the character of a natural area, or where grass-cutting for recreation reduces biodiversity.

Capacity and spatial priorities seem to lie behind the small-scale approach being taken in some municipalities. In densely urban areas, spatial constraints mean that this is the only approach possible, and genuine impact can then only be achieved by creating networks of highly local initiatives. There also needs to be an acceptance that some projects may fail, because a well-meaning initiative that looks good to human eyes may not suit the wild population it seeks to support, or the environment in which it is sited.

Respondents draw attention to statutory and other frameworks that provide some protection for biodiversity, and which can encourage municipalities to act. England has instituted a mandatory requirement for biodiversity net gain in determining planning applications, which is expected to push the issue up the agenda. But European respondents note that the EU is promoting a less demanding approach of 'no net loss', allowing biodiversity to be interpreted as a softer element than other GI gains, and legitimising lower importance.

Biodiversity is recognised as integrating well with the wider dimensions of GI, but frequently in subtle ways. Often, it is a by-product of a GI initiative aiming at a different gain, for instance in Kapelle where maintaining the bee population is vitally important for a local economy that depends heavily on fruit-growing. The economic priority also generates a biodiversity gain. Similarly, a local forest project was approved because of its health impact; there is a contribution to biodiversity, but this alone would not have got the project approved. Other authorities report the same approach, either balancing biodiversity with other gains such as human health, or making it secondary to other ecosystem services (SuDS for example) that are more likely to secure approval.

'The headline in one of the newspapers was "Did a butterfly whisper in [the Mayor's] ear?"'

Anonymised

'People say they care about biodiversity, but when they have to make... choices, they don't choose biodiversity.'

Bruges

'Biodiversity, it's interesting, but it's not really, really, really the most important thing in the world for [this municipality].

Anonymised

3.3.8 Pollution

The positioning of pollution in this ranking is again a product of a diversity of opinion, with fairly even numbers of respondents assigning it to each of the three priority categorisations – one third of respondents gave it a high priority, but a similar proportion said it was not a priority for their city. Pollution takes several forms, but is most frequently recognised and discussed as an air quality issue associated with traffic, and therefore a particular focus of those areas with high traffic volumes or congestion issues. This can mean that resolving the traffic problem becomes the focus, rather than the pollution that it produces, while in some municipalities - Lille and Cambridge for instance - addressing pollution caused by traffic is complicated by fragmentation of responsibility between different municipal bodies. Addressing pollution caused by traffic, however, may mean confronting motorists, whose support for change is often qualified, and businesses whose reliance on car users makes them resistant to any change that might threaten trade.

Traffic, though, is not the only pollution issue mentioned. Litter is an important dimension of pollution and is identified as such in The Hague and in Southend. At Southend, where the beach is an important element in the local economy, litter often prompts higher public awareness and a response which can range from voluntary clean-ups to noisy complaints. Water pollution is much less frequently identified, although water quality is important to tourism in Bruges. Industrial pollution is not a prominent feature of responses at all, although agricultural run-off has caused problems in one locality to the extent that local biodiversity is under threat.

Awareness of air quality has given rise to measurement initiatives and even public engagement with the issue. A newspaper in Flanders carried out a programme with local residents that measured high levels of atmospheric pollution caused by traffic, adding a new and public dimension to a known issue of traffic congestion.[7] Measurement has led one UK authority to be put under pressure as one of a number of municipalities singled out by national government as needing to tackle air quality. But there are other respondents who see air quality as largely beyond their capacity to measure or quantify, or who have even become accustomed to an atmospheric smell a visitor might find distasteful. A view that pollution is not now as bad as it was in the past is outweighed by those who recognise an urgent and growing problem with wider ramifications in terms of health, biodiversity, tourism or carbon.

7 This was a citizen science project initiated by the University of Antwerp and supported by a newspaper called 'CurieuzeNeuzen' (https://curieuzeneuzen.be/in-english/) [Accessed 22 June 2020].

Nevertheless, in spite of that recognition, the prevailing sense among respondents is that pollution is still too abstract an issue to merit the attention they would like it to receive. Some say that it is a subject they never hear about in the town hall, while others actively pursue alternative agendas that will also deliver pollution-mitigating outcomes, because these are what will capture decision-makers' attention. So, just as traffic problems are addressed as congestion issues, other GI projects with air quality benefits are described as enhancing amenity for residents, improving biodiversity, improving resilience, or addressing public health, simply because pollution is not as visible or as well recognised as a core issue, or is seen as too difficult to confront directly.

'I have maybe 15 projects in this region, and I never hear anyone talking about this.'

Anonymised

'Dog poo, paper, plastic, bags, tins... Litter has a high priority also with people, and with one or two aldermen'

The Hague

'Yes, we want cleaner air, but we must use our cars.'

Antwerp

3.3.9 The Heat Island effect

This was only seen as a high priority by one in seven respondents. Municipalities take one of three positions on the heat island effect. A small number of respondents say that it is recognised as a problem, but is beyond their capacity to address in any meaningful way. A more likely response is that the heat island effect is increasingly recognised as a phenomenon, but is not prioritised for a variety of reasons. And there are authorities that both acknowledge the issue and are committed to tackling it.

Some municipalities struggle with an awareness gap between their officers, who are aware of the issue and its roots in climate change, and the decision-makers – especially the politicians – who are not nearly as aware, less well-informed, or are not motivated to make it a priority. One problem in this respect is that the solution may take a long time to result in any recognisable change, falsely suggesting a slowness of municipal response. Another is that the problem is simply too big to be tackled meaningfully by a smaller municipality.

Experience of the heat island effect has made a difference in some localities, however, and driven the issue up the political agenda. This is especially true in Lille. Action may be a response to human discomfort (and worse) rather than a recognition of a climate emergency, but it has at least taken place. Even in municipalities that have experienced abnormal temperatures, however, there is not necessarily a public outcry; some respondents suggested that their residents enjoy the temporary spells of hot weather, and quickly lose interest when the weather cools, making it difficult to badge it as a problem issue. And the localities that experience the problem most seriously have included those with less affluent, less articulate and less influential population groups that generate less political pressure.

Having said that, there are suggestions that awareness is growing. Research has been commissioned by three authorities and data is being produced to evidence the effect, using maps to show where it is most potent, and identifying tree species that can help address the issue and locations where

these trees might most effectively be planted. Coverage of the issue has increased as climate change has risen up the news agenda, and as municipalities have declared climate emergencies – one has a heatwave plan - but there are still politicians who want short-term solutions rather than longer-term strategic approaches.

> *'I think you'd struggle to get an understanding within this authority of what [the heat island effect] actually means.'*
>
> *Anonymised*

> *'The people who suffer the most... are often the people that we do not see, that we do not hear... they do not vote.'*
>
> *Anonymised*

> *'It's an emergency... it's a climate emergency, and we have to do something... to reduce the impact on the population'*
>
> *Lille*

3.3.10 Carbon capture

Nearly half of all respondents placed this in the lowest priority category, many of them while noting its apparent prominence in recent municipal declarations. Just one in five said their city rated this highly. Many respondents note that their authorities have declared climate emergencies, climate change strategies or made net zero carbon commitments that have placed this issue front and centre in their priorities, and one is a partner in a project working on a city-wide carbon reduction plan. Nevertheless, respondents do not necessarily believe that the commitment is yet being reflected sufficiently in practice, and there is a view that officers are much stronger on this issue than their elected decision-makers, and are more aware than politicians are of tactics and approaches that can address carbon reduction. An intervention in the Netherlands called a halt to some large new developments because they were insufficiently sensitive to carbon neutrality, but did not examine how to change the contribution of existing developments to the problem. Progress on this issue is thought to be hindered by relatively weak European, national and provincial policies that do not impose sufficiently strict standards, as well as by political parties that deny climate change. The Flemish government published a new policy while these interviews were taking place, but the general consensus was that it was insufficiently forceful to make any real difference.

Nevertheless, respondents report a move towards greater recognition of this issue, both on the part of councillors and in the wider public, where phrases like carbon footprint are increasingly used and deemed important. There is also increasing recognition of the links between the more abstract concept of carbon reduction and more direct effects felt by citizens, such as air quality or climate extremes. Respondents express frustration that results on carbon reduction will not be apparent within the political cycle, so more visible projects that have carbon capture spin-offs are being used to demonstrate action and secure benefits in the shorter term. Trees are widely seen as part of the way to achieve carbon neutrality, but this is viewed as simplistic by those who are more familiar with arboriculture, and the short-term gains are more to do with an attractive place to live, or biodiversity, while giving a nod to carbon issues through storage rather than actual reduction.

'The citizens have been challenging the Mayor using the slogan "Mayor, we are coughing" ... and in response, the Mayor has been [seeking] solutions for carbon capture.'

Anonymised

'It's a priority for us. Maybe not for our political decision-makers, but for the technical decision-makers, that's quite important.'

Anonymised

3.3.11 Increased land values

Land values are only rarely given any priority by respondents; one in five said it was a high priority in their authority. The idea that proximity to a green space increases the value of a property is recognised in some quarters, but by no means everywhere; it really only emerges as a priority in the UK. In Southend, it forms part of the authority's development strategy, combining an attractive place to live with increased taxable values, but creating a tension between quality and space utilisation. In Cambridge, in contrast, the emphasis is on trying to keep land values, and housing costs, under control in a locality where land values rise without any encouragement, making housing unaffordable for key workers. In the European authorities, however, this aspect of GI receives relatively little attention and although sometimes recognised as a GI consequence, is very rarely identified as a priority; the equation being confronted in Southend is, in Europe, generally resolved in favour of development, and increasing numbers of units rather than property values.

'Increasing land value and property value are obviously absolutely critical to making development work.'

Southend

'It's something we probably would want to try and avoid, if I'm honest, in terms of affordability of homes.'

Cambridge

3.3.12 Noise reduction

Only one in nine respondents recognises this as a high priority in their locality. For this group of respondents, noise arises in two main areas: traffic and aircraft. Industrial noise is not prominent in this group, and there are several respondents who indicate that noise is not something that receives a lot of attention either in council priorities or in public feedback. A few respondents had difficulty in placing this card, suggesting it is, for them at least, both an area of ignorance and an issue that is not especially prominent, while others suggested it was not well recognised at the higher levels of their authorities.

Traffic noise is a particular problem in suburban areas of the Zuidrand such as Mortsel and Aartselaar, where traffic passing through is heavy, but also comes up as an issue in cities with higher-density populations where proximity to roads increases the scale of the problem. Pressures for new housing numbers combine with lack of space in The Hague, for instance, to create a need for noise mitigation that is difficult to address satisfactorily; there are similar problems in Bruges, again caused by increased traffic density and lack of space to take measures against noise impacts.

Two localities, Antwerp and Southend, report issues with aircraft noise, linked to their proximity to airports. In both cases, there is a suggestion that an expanded rôle for the airport is resulting in increased noise pollution for residents on the flight paths. Antwerp Airport has become a small international passenger facility which is seen by some politicians as an important contributor to the local economy, and by others as a nuisance to be fought against. Southend Airport has also expanded its freight operations to include more night flights, and this is causing anxiety, and public reaction, locally. Interestingly, though, Essex say they receive relatively little feedback about the major international airport at Stansted, and there was no mention in The Hague about noise impacts from Schiphol, although it is not that far away. Thus, while GI has obvious potential to address noise problems, these are not sufficiently high profile outside specific localities to motivate support for GI in themselves.

'A lot of big roads leading to Antwerp pass through Mortsel and that causes a lot of noise.'

Antwerp

'[Aircraft noise] is causing a big hoo-hah and we're going to have to deal with it in some way.'

Southend

Photo: Phil Bock

4 Obstacles to Green Infrastructure Projects

4.1 Overall assessment

As with the exercise described in Chapter 3, respondents were given a set of randomly shuffled cards identifying potential obstacles to a GI project in their municipality, and were asked to sort these into three groups, according to whether they perceived the issue described on the card as a serious obstacle to a GI project locally, an obstacle that could be worked around or negotiated, or not an obstacle at all.

Points were awarded to each response, with serious obstacles scored at 2, negotiable obstacles scored at 1, and non-obstacles allocated zero points.[8] The total scores for each card were then aggregated and averaged to generate mean scores to indicate the extent to which each issue represents an obstacle (Table/Fig. 4.1).

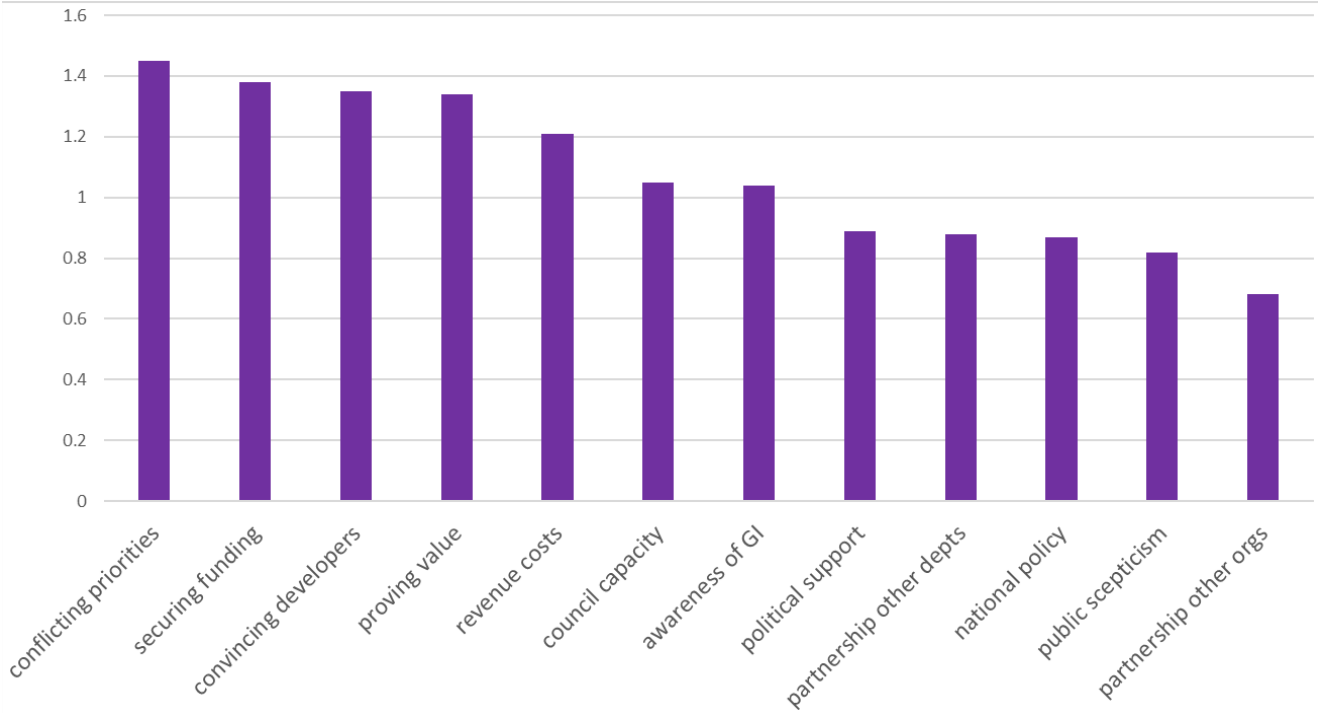
Table 4.1: Obstacles to GI projects: Mean scores for all respondents

Obstacle	Mean score	*Standard Deviation*	Times as serious obstacle
Conflicting priorities within the local authority or partners	1.45	*0.67*	28
Securing funding	1.38	*0.74*	28
Convincing developers to take this kind of approach	1.35	*0.66*	23
Difficulty proving value against non-GI approaches	1.34	*0.69*	24
Addressing ongoing revenue costs e.g. of maintenance	1.21	*0.70*	19
Your authority's capacity to do the work needed	1.05	*0.80*	18
Limited awareness or understanding of GI	1.04	*0.67*	13
Securing political support for GI	0.89	*0.66*	9
Need to build partnership with other departments	0.88	*0.76*	12
National planning policy support for GI	0.87	*0.81*	14
Public scepticism over value	0.82	*0.65*	7
Need to build partnership with other organisations	0.68	*0.62*	4

N ranges from 52 individual scores up to 53

8 This technique is known as a Likert score. A mean score of 2.0 would indicate a serious obstacle identified by all respondents. Any score above 1.0 indicates an obstacle of some significance across this sample, and a score above 1.5 indicates an obstacle that is widely shared. In contrast, a score below 0.7 indicates an issue which is only rarely seen as being problematic. Cards not assigned as an obstacle are excluded from the calculation.

Figure 4.1: Obstacles to GI projects: Mean scores for all respondents



Five obstacles score significantly above the 'negotiable obstacle' level of 1.0, and these can therefore be accepted as serious challenges faced by GI projects across the partner cities. The most significant of these is a **conflict of priorities** within the local authority (or, less frequently, with its partners). Other obstacles in this category include **securing the necessary funding**, problems in **convincing developers** to adopt GI in place of more traditional approaches, and the issue of **proving the value of GI** in comparison with those other, more tried and tested, approaches. Less prominent than the other four overall, is the issue of **ongoing revenue costs**, such as maintenance, once the capital project is completed.

Mid-ranking obstacles include **the authority's capacity** to do the work, normally a function of resources such as finance and staff numbers; **awareness of GI**, and **political support** for the concept. These are scored at the level of negotiable obstacles, but only the latter two can really be considered as such; capacity issues are evenly spread across all three possible scores, and the mid-ranking is an average that conceals what is a serious obstacle for about a third of respondents, and a non-obstacle for a similar proportion.

At the other end of the scale, the least significant obstacle is **partnership with other organisations**. Interestingly, this scores lower than the problems arising from **partnership with other departments**, indicating that internal priorities and boundaries within the local authority are more difficult to negotiate than those between the municipality and other organisations. **Public scepticism exists**, but is a much less significant obstacle than most of the other cards, and **national planning policy** is not seen as a significant hindrance in itself.

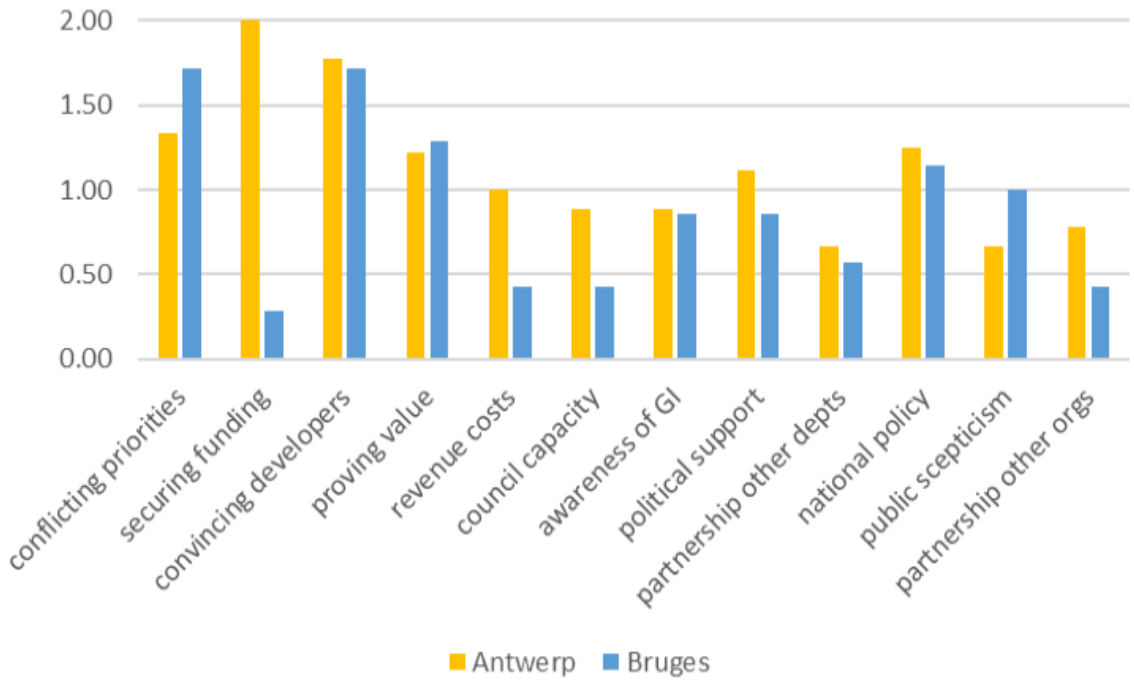
One respondent identified ten of the suggestions on the cards as serious obstacles in their authority, although this was not a view shared by their respondent colleagues from that city. Half of respondents thought that there were four or more serious obstacles to GI in their cities. Conversely, three respondents, from two cities, indicated just one serious obstacle in their city, and just two respondents identified no serious obstacles that would hinder a GI project. Any obstacles that do exist are for them completely negotiable.

4.2 Variations by country, city and rôle of respondent

As with the priority cards, there are variations by country that the overall results conceal.

In **Belgium**, the problem of convincing developers to adopt GI approaches is by far the biggest challenge to implementing GI, with a much higher score than the overall result. National planning policy also emerges as a more significant obstacle in Belgium, but nevertheless is perceived as a problem that can generally be negotiated rather than a serious hindrance. In contrast, revenue costs such as maintenance are much less of an issue in Belgium than elsewhere, as are the problems arising from municipal capacity. The challenges of working with other departments within the municipality are also lower in Belgium, but this can be attributed to the somewhat unique circumstances of the authorities here: in Bruges, highways and GI share the same alderman and departmental structure, promoting much greater co-operation between activities that are often in conflict elsewhere, while in the Antwerpse Zuidrand the smaller municipal boards may mean that political responsibilities are less strongly demarcated. City results in Belgium vary (Fig. 4.2).

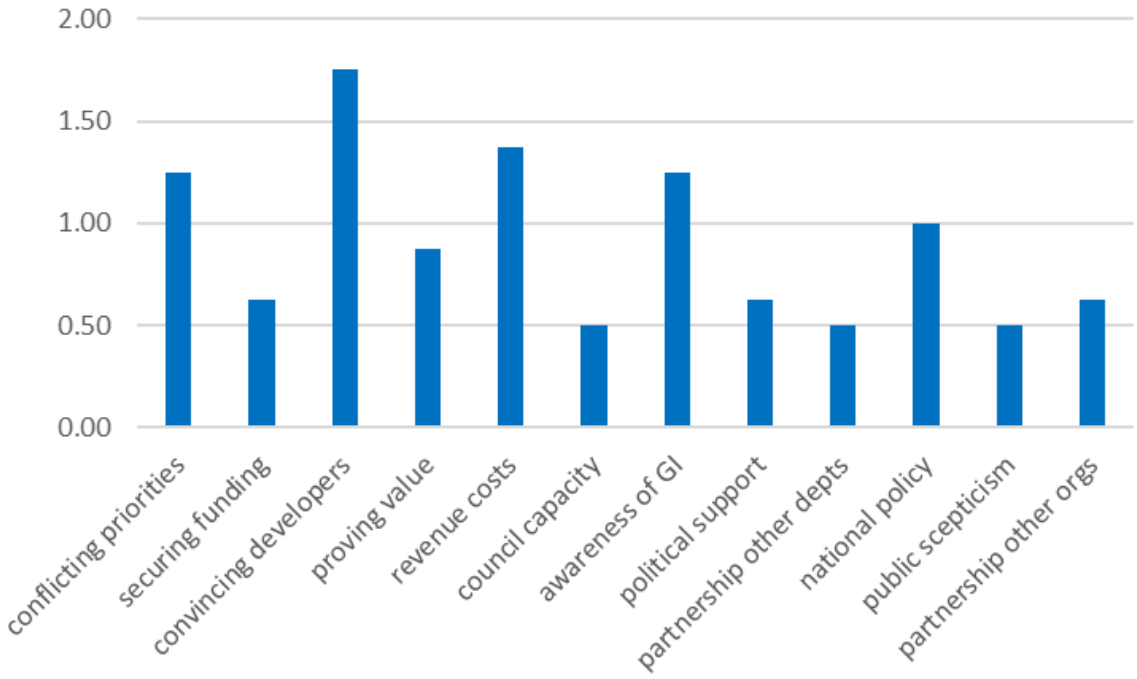
Figure 4.2: Obstacles to GI projects: Belgian cities



The most striking difference here is the rating for funding, which emerges as much less of an obstacle in Bruges than in Antwerp; Bruges is acknowledged as a wealthy city. Antwerp also finds the issues of revenue costs and municipal capacity a bigger challenge than its counterpart in Bruges. Bruges, on the other hand, has a little more of a problem with public scepticism. But apart from these issues, the results are fairly similar.

In **France** (where again the sample size demands circumspection) developers are the biggest challenge to GI project implementation, but several issues that are problems at the overall level emerge much less strongly in Lille (Fig. 4.3).

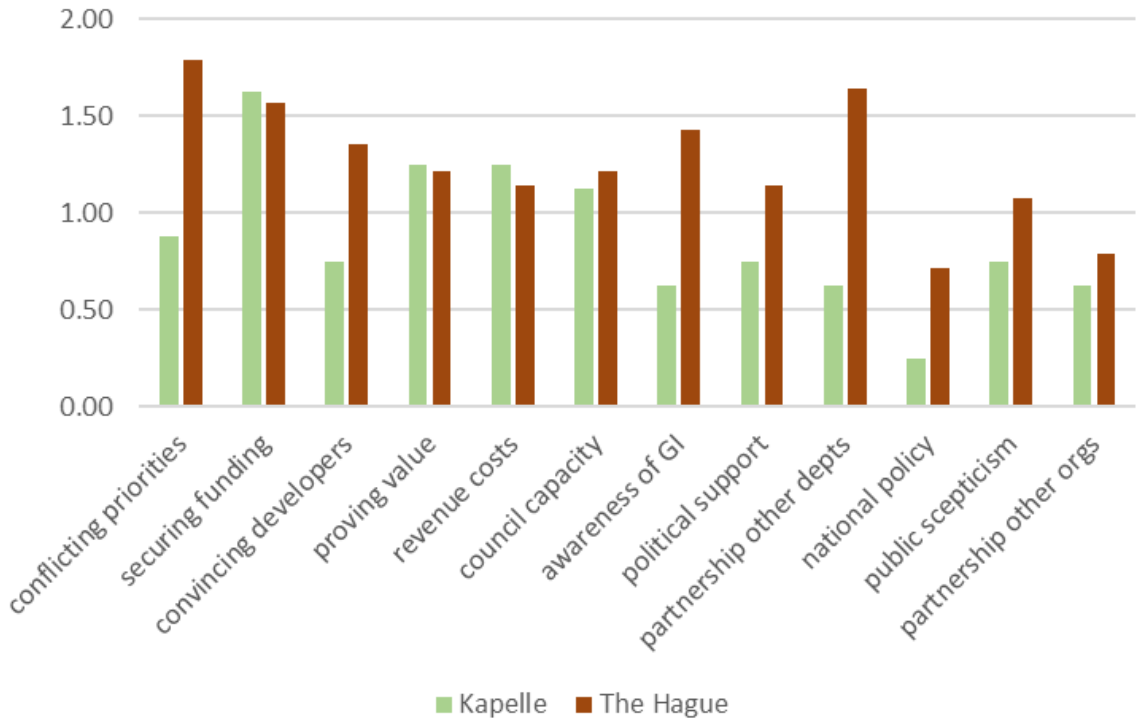
Figure 4.3: Obstacles to GI projects: French cities



Funding is much less of an issue in this municipality, with no respondent identifying a serious obstacle in this respect, and the capacity of the authority to do the work is also not really an obstacle either. Nor is the need to prove the value of GI against traditional approaches. Problems with other departments are also less challenging, perhaps in part because one of the common problem areas, highways, is managed by a different organisation. Public scepticism is almost non-existent as an obstacle in Lille.

In the **Netherlands**, the variations are less marked than in the overall result. Developers are less of a problem, but still represent an obstacle, albeit one that can be negotiated rather than a major hindrance. Funding, on the other hand, is a bigger challenge in the Netherlands than the overall result would suggest. One of the biggest variations here is the difficulty presented by national planning policy, which emerges as a much less prominent challenge for Dutch municipalities than for their counterparts elsewhere. But other than these results, the Dutch scores follow the overall results quite closely. Scores for Dutch cities are shown here (Fig. 4.4):

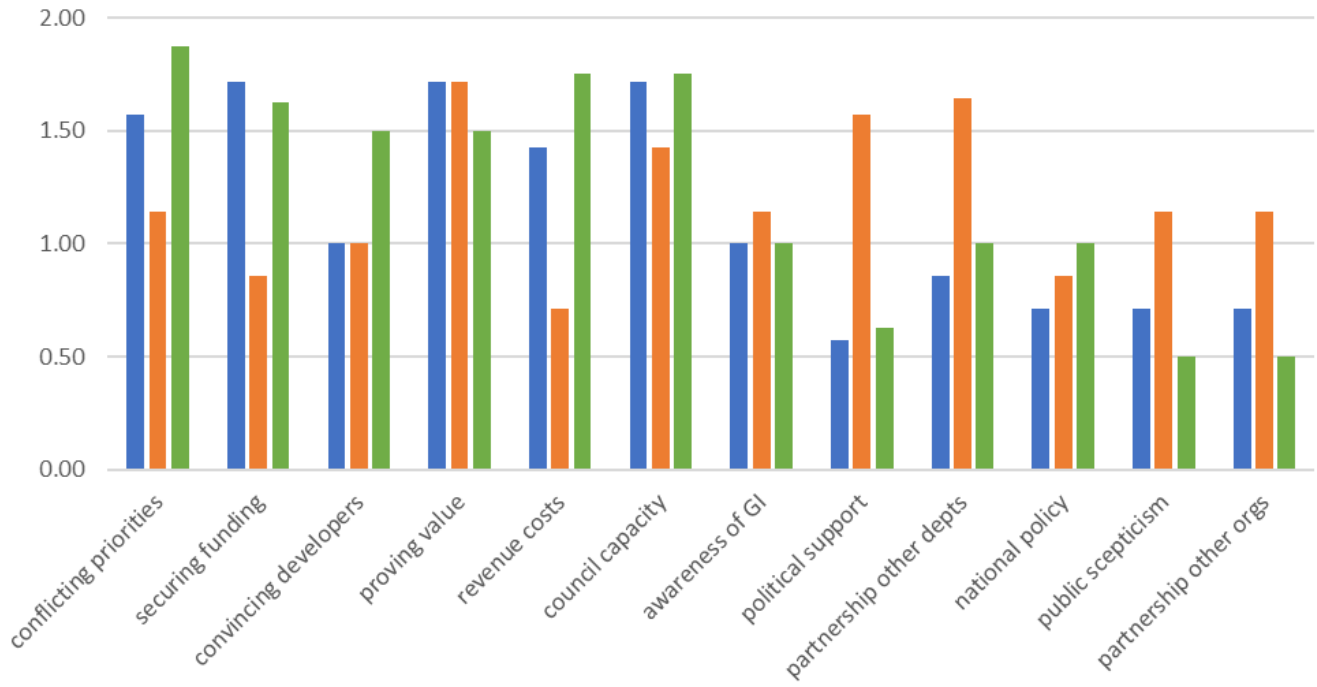
Figure 4.4: Obstacles to GI projects: Dutch cities



Several of the obstacles are shared between the large urban city and its rural counterpart, but there are some noticeable differences too. The Hague generally scores the obstacles more highly than Kapelle does, suggesting that the city has had a more difficult ride thus far. In particular, The Hague has much bigger obstacles in relation to partnership, both within and outside the organisation, and also identifies more serious issues with developers, and with public scepticism. The Hague also has to deal more with problems arising from awareness and with securing political support.

The **United Kingdom** results indicate a very different context for GI developments compared to their European counterparts; it is noticeable that most of the obstacles on the cards represent bigger problems in the UK than elsewhere. The need to prove value emerges as the biggest problem, with revenue costs also a much bigger problem in the UK; funding is also more of an issue, so the three finance-related obstacles in this card set all represent bigger challenges. Conflicting priorities are also a major obstacle to GI implementation here. But the biggest difference from the overall result is in organisational capacity, which is a much bigger challenge in the UK than in mainland Europe. Respondents identify significant cuts in their operational budgets, which affect their capacity both to develop ideas into projects, and to implement those projects once approved. UK city scores can be seen here (Fig. 4.5):

Figure 4.5: Obstacles to GI projects: UK cities



The main differences between the two cities' experiences lie in funding (both capital and revenue), which are seen as a bigger challenge in Cambridge, and in political support and in partnership within the authority, both bigger challenges in Southend. Southend also faces slightly more of a challenge in relation to public scepticism and in external partnerships, though neither are serious obstacles. Proving value and convincing developers are obstacles of equal scale to both authorities. Essex's main obstacles are the same as the overall results, but with added emphasis on revenue costs.

4.2.1 Variations by responsibility

Variations by rôle within the organisation are also present in the scoring for obstacles. **Elected members** tend overall to rate obstacles as less serious than their officers do, but they are more likely to appreciate obstacles in relation to national policy, and to securing funding, and less willing to acknowledge problems arising from public scepticism or political support for GI. **Senior officers** are especially alert to problems with developers, while **project managers** have significant issues relating to proving the value of GI as against alternative approaches, and with public scepticism over value.

4.3 Discussion of card placement rationale

As well as asking the respondents to sort the cards, they were asked questions about their choices, especially where these seemed contradictory or where explanation seemed desirable. This section sets out the results of these discussions, and thus illuminates the background to card placement.

4.3.1 Conflicting priorities

Conflicting priorities were identified by over half of all respondents as a serious obstacle to GI projects in their municipalities. Only six respondents suggested this was not an obstacle for them.

One of the main policy areas where conflicts arise is in highways and mobility. There are some municipalities where the needs of the motorist are given a higher priority than any green agenda, so that even where the city has a stated GI priority (for example, promoting active travel), this may be compromised by concessions to the motorist that place constraints on the GI outcome. Road safety measures can also conflict with GI priorities, such as by requiring removal of trees or shrubs that create risks for motorists. Several respondents in different authorities convey the idea that attitudes to the car, and to parking, are serious obstacles to progressing a green agenda in their locality.

The other major area of conflict is in housing. Several NSCiti2s cities are engaged in major housing developments at present, and the priority attached to delivering numbers of units, and maximising gain for the developer, works against the provision of green elements in the project plans. Even in authorities that are seeking to balance development with green provision, there is conflict over which of these two needs should prevail locally. Elsewhere, green content is emerging as something of an afterthought, and is consequently more difficult to deliver, and more likely to be tokenistic in nature.

Conflicts can also arise in relation to economic development priorities, where commitments to biodiversity or concepts like environmental net gain (a national planning requirement in the UK) are seen as constraints on regeneration programmes.

Respondents also give examples of perverse policies, such as a mandatory tree-replacement scheme which forces tree-planting on open spaces, reducing their recreational value. Trade-offs like these are not always beneficial. Similarly, recreational and/or economic gain from the use of an open space for a temporary event can end up damaging the space concerned. Performance measurements imposed by regulators or funders can be inflexible, and prevent more efficient or more sustainable solutions that deliver over a longer term or using alternative approaches.

Fundamental to this issue is the separation of responsibilities within local authorities, with different departments, and different political leaders, pursuing the policy agendas they have been given. So, for example, a political leader responsible for the climate change agenda may not be responsible for activities that make an important contribution to that agenda, such as parks and recreation. This can work against a holistic approach, especially when the two political leaders represent different political parties or groupings; it also reinforces the need to dress projects up appropriately to the audience that will decide on their future. In contrast, those authorities that have successfully brought related functions under the same overall management have seen genuine progress through more holistic approaches, allowing GI to be designed into projects from the outset.

'Planting trees is... very, very fine. But if you can make a road, then that's still more important.'

Antwerp

'The city has contradictions... housing... and green infrastructure, the two are not always in harmony. We need to find a balance between nature and development.'

Lille

'It used to be more of an obstacle, but since we put some different departments together in the same department, the connection between colleagues... is much better.'

Southend

'Two different goals sometimes clash...and if they are clashing, then most often we just do nothing.'

Anonymised

4.3.2 Securing funding

Over half of respondents identify funding as a serious barrier to GI progress. Funding was the subject of a separate section of the survey, and is discussed in more detail in Chapter 6, but can be summarised here in relation to its operation as an obstacle.

External funding can sometimes be secured from local partners (water authorities or environmental bodies, for instance) for smaller-scale projects, but larger projects will call for the kind of money distributed at regional, national or European level, with all that this implies in terms of accountability and project management. Respondents from several cities note that the availability of external funding can make the difference between approval and rejection of an idea; the attracting of external resources can also be turned to political advantage by presenting the authority as winning money for its citizens. It can also turn a relatively minor project into a larger-scale, higher impact project, as in Kapelle where external resource transformed a local sewerage improvement project into something much more impressive.

Funding is closely related to capacity, in that the municipality needs the skills to assemble business cases and bid documents, and to manage and account for external resources. Capacity is a particular issue for smaller authorities, and this inhibits their ability to raise external finance, and means that many projects have to be managed within existing budgets. Larger and more ambitious GI projects can be costly, beyond the reach of a smaller municipality, making collaboration (as in the Zuidrand) essential to move forward.

And funding connects to conflicting priorities as well, especially in relation to the use of the municipality's own resources, where other obligations may claim a higher priority than GI. This reinforces the need for a business case to prove the value of the proposal and to evidence value and impact. The quality and strength of this evidence is quite variable, as Chapter 7 confirms, but at least one authority looks for a case that indicates both the financial payback and the time period over which that can be achieved, a longer-term view that would be quite alien to some NSCiti2s authorities. Feasibility studies can be used to prove the concept, at relatively low financial risk, providing evidence that can justify investment and even borrowing to fund large-scale programmes.

Finance seems to be a particular problem in some UK authorities, where pressures on authority budgets affect maintenance of existing provision and capital for new projects. In one authority, maintenance costs for green elements in a new development are now being transferred to residents, through service charges, where before they would have been added to the council's maintenance schedule. GI capital requirements are in competition for more limited resources within capital programmes, and need stronger business cases to compete effectively.

One authority, Bruges, identifies no serious funding problems. The authority is relatively well-off, has a powerful political advocate for GI, and also has the capabilities necessary to bid for and manage EU funding across a range of GI projects. Lille is similarly confident about its capacity to fund its projects, but nevertheless also works with other local agencies and draws on EU resources successfully as well. Southend respondents report that their authority has worked to address the funding challenge, though more is needed on this in respect of GI projects. In contrast, funding is seen as a much greater problem in Antwerp and Cambridge.

'When you've got our Councillor, when she is behind your project, then we get the money... we don't have problems with money here.'

Bruges

'We've got... a lot of checks and balances... about having to justify it through a business case... before you embark on any spend, you'd have to justify it in terms of business benefit.'

Cambridge

'We are not a rich municipality... [but] we have a lot of space... to maintain. It costs a lot of money and you have to make choices.'

Kapelle

4.3.3 Convincing developers

Convincing developers to integrate GI into new developments is identified as one of the main obstacles to delivering GI projects, and is a problem for all municipalities in this study, with close to half describing it as a serious obstacle to progress. Respondents identify the first line of defence in this respect as their city's planning regime.

There are respondents who confirm that planning requirements embodied in municipal codes or in other enforceable measures can be effective, and that when larger developers are competing for larger contracts, they will often be happy to have GI conditions imposed at the outset, knowing that their competitors also have to respond to the same requirements. There is a perception that a level playing field in procurement can allow even quite demanding requirements to be accepted by developers. However, there are sometimes issues with the strength of the requirement, which can be expressed in quite vague terms that are open to liberal interpretation by both the developer and the client, meaning that any GI provision that is provided can be quite tokenistic and a long way short of optimal. Some UK respondents believe that a mandatory national requirement to achieve a net gain in biodiversity is expected to influence proposals; the European equivalent policy of 'no net loss' is seen as much weaker.

Respondents in smaller municipalities identify a reluctance on their city's part to impose strict requirements, because they need developers willing to work with them, and are competing with their neighbours to attract developer interest. Smaller authorities may also struggle to negotiate effectively, lacking the capacity and the knowledge to stipulate meaningful requirements or to secure their incorporation in contracts. Enforcement can be an issue, and the final build may not be entirely as expected from the plans; there are instances where rules have been bent to allow a development to proceed with less GI than it should have had. But Mortsel (in the Zuidrand) puts itself forward as an example of a smaller authority that has an effective regime both in imposing its code and enforcing it vigorously.

Relationships with developers are not entirely one-way. Some respondents suggest that client power – and local public pressure – can also exert an influence, and developers know that there are some cities where they will have to incorporate serious levels of GI if they are to be competitive in those environments. Respondents from local authorities in areas of growth identify that their cities are not only offering large-scale development projects but are also potential clients for the future as well, and believe that emphasising GI as a requirement, and promoting it as an expectation of the client, will encourage developers to take a pragmatic, longer-term view and be more amenable to GI components in their proposals. They may even move towards more impressive GI provision in their bids – and so too may the investors who back them financially,

The idea that green components can increase the value of properties adjacent to that space is generally accepted, but does not necessarily translate into a realistic allocation of green space within a development. The housing that might be built on that space is still more valuable than any increase in sale price that might be gained through greening. This means that green elements have to be demanded, either through planning conditions or through client power, rather than leaving them to market forces alone.

Developers are widely, and legitimately, seen as motivated primarily by reducing cost and maximising profitability. This frequently means that developments are predicated on the basis of providing the maximum number of units of housing or commercial property possible, and this in turn means resisting pressures to allocate space to green works. But there is a sense that developers are changing their approach. Larger developers in particular are recognised as increasingly aware of GI, and more receptive to incorporating these approaches in their plans. But smaller developers are seen as much less likely to be engaging with GI principles, less aware of alternatives or potential financial benefits from them, and more committed to doing things in traditional ways, where they are familiar with the technologies and with how to cost them. This will not change, some say, until public attitudes and priorities give a lead; and the experience of Cambridge suggests that this can happen.

'Developers are interested in cost, and are limited in their experience and understanding of GI, so they tend towards the technologies they know best and can cost with confidence.'

Lille

'They have to put GI into [the development], but we have no control over the quality... it's an amount of space. Most of the time it's grass, and two or three trees because they have to.'

Bruges

'It's how you enable the developer to see the benefits... that aren't always financial... or how you monetise the benefits of GI and explain the value in financial terms to a developer.'

Essex

'From a developer point of view, we've been having these discussions [about GI] and they get it, they seem behind it.... The key players, they recognise that it helps to sell homes.'

Cambridge

4.3.4 Proving the value of GI

Although there is one municipality that suggests it does not have to prove the value of GI, that its decision-makers are already convinced that this is right way to go, most respondents identify a problem here in terms of convincing their decision-makers, developers and even local people that GI is a cost-effective alternative to grey infrastructure. Close to half of all respondents indicate this is a serious obstacle to GI in their cities.

There is an assumption in some quarters that grey solutions are likely to be cheaper. The grey technology is familiar and can be costed with confidence, and appraised by the municipality based on extensive previous experience in these approaches. There is also a view that, even if GI is cheaper, the financial gain is not sufficiently obvious, or readily capable of measurement, or tangible, to convince a sceptical or conservative authority to move beyond its grey comfort zone. That has not, however, discouraged respondents from trying, and in some cases succeeding, in at least proving the value. One ray of hope for these respondents is that the next generation of civil engineers will have been trained to assess and evaluate GI to an extent that is not within reach of their current counterparts.

Several respondents identify longer-term thinking as an issue in their authorities, so that any savings claimed for GI installations would be more potent if they were more immediately deliverable. Cities often find the benefits difficult to quantify, or to quantify convincingly, and attaching a monetary value, a cost saving, to a metric that may in itself be quite tentative, reduces conviction further; respondents are hesitant about taking unverifiable calculations to their decision-makers. The axioms of value for money make it difficult for decision-makers to take the risk associated with an unproven approach when they can easily defend and justify a grey alternative.

There are, nevertheless, examples of GI that help make a case for this alternative approach. Some demonstrate a cost saving on the capital cost alone, while other authorities can demonstrate savings in maintenance costs as well as in capital spend. Southend has taken this even further by monetising the gains derived from energy-related projects, using these calculations to justify additional investment where returns will extend over a long time period. These assessments are more powerful arguments than mere assertions of value, and the hope is that these may be transferable to GI projects; many authorities would like to follow suit but lack tools with which to carry out this type of assessment in a convincing way, reliable data to feed into these tools, or the endorsement and authentication

their decision-makers will require. Respondents draw attention to the existence of support for this argument in academic papers, in government guidance, and/or in operational support, but suggest that distilling or conflating this information into a more accessible form has not yet happened, leaving the argument as still too theoretical. Data can be presented in support of GI, but is difficult to understand or to explain convincingly; research and principles need to be translated into evidence and policy, and smaller cities may not have the capacity or the data-handling confidence to do this internally; they need help.

> *'Actually, it was cheap as chips doing green, natural flood management, relative to a traditional scheme.'*
>
> *Essex*

> *'The way I work is to make a money analysis... and in most of the cases the green infrastructure is much cheaper to realise than the hard infrastructure... even if you count the maintenance.'*
>
> *Bruges*

> *'We are not in a position to show evidence... that it is cheaper... it's very difficult... to do it well... and that's an obstacle to getting serious attention.'*
>
> *Kapelle*

4.3.5 Ongoing revenue costs

One in three respondents say this is a serious obstacle for their municipality, and it is interesting to see the variation in how municipalities view, and act on, ongoing costs such as maintenance obligations after a capital project is completed. In some instances, these costs are transferred to the authority, and create a budgetary pressure that needs to be addressed. But in other cases, including the authority's own projects, the maintenance budget is simply absorbed into a much greater maintenance operation already in existence. If the maintenance cost is not adequately provided for, even high-profile projects may fall into a state of neglect and perhaps embarrass future administrations.

Some projects make provision from the outset to cover maintenance, at least for a period of time, whilst in other projects it is not considered at all until the need arises, when it becomes someone else's problem, and can be a bone of contention (or a *fait accompli*) between the commissioning department and its grounds maintenance colleagues. In the UK, a device called Section 106 provides for the developer to make financial contributions that can include maintenance obligations, but these are time-limited and often no consideration is given to what happens once this period has elapsed.

An argument that is sometimes deployable in these circumstances is that GI is much cheaper to maintain than its grey alternative, although this assertion is not always well-evidenced, and does not eliminate the immediate costs of activities like mowing grass or removing weed growth, costs which can arise more quickly and more frequently than repairs to grey infrastructure, even if they cost less. Maintenance costs can also escalate in unexpected and unbudgeted ways, such as a surge in visitor numbers causing erosion and requiring intervention.

One way of addressing maintenance issues is through the use of volunteers and volunteer groups. This is an approach that seems common in the UK, and has a lower profile elsewhere in NSCiti2s cities. Environmental groups, who want to be active in conservation, are an obvious possibility, but so too are user groups who can feed back to the authority on problems or maintenance needs they have identified through using the GI in question. The Cambridge project hopes that it will result in more people coming forward as volunteers in tree management and in identifying necessary action. Community groups can also be useful in fund-raising, perhaps tapping into sources not available to public authorities, and attracting corporate sponsorship, for instance, and individual volunteers can increase their employment potential by adding experience to their CV. But they also come with risks in terms of volunteer safety, and the possibility that they might act in ways the council would not approve of, so they need management and direction, which creates its own budgetary and capacity demands.

'Those volunteers, they're not free... it needs a lot of co-ordination... but they turn up and they've bought new wheelbarrows and spades... the appetite for small scale stuff to be involved in is relatively easy.'

Cambridge

'Sometimes the maintenance cost of a green alternative will be lower than the maintenance cost of a hard alternative, but [it's] a problem because we have a really small department for the maintenance.'

Kapelle

'Investment is not a problem here... but keeping things going after that, year after year after year... that's a big issue.'

The Hague

'In the beginning, [maintenance] was an afterthought, but now that we are a bit more experienced, we are trying to settle it from the start.'

Antwerp

4.3.6 Organisational capacity

Respondents are very evenly split on this issue, with a third of them assigning it to each of the three categories. Capacity resolves itself into three broad, and interconnected, areas: workloads, skills, and finance, interlinked because the solution to one dimension often lies in one or both of the others.

Of the three, workloads are the most frequently raised. Some authorities have identified GI opportunities, or could do so, but the team responsible for delivery is too small and too heavily loaded with existing work to take advantage of this situation. In one authority, a single part-time post is not enough to act on all the possibilities, while another with just one person working in this area obtained unexpected support for a much longer list of opportunities than they are capable of delivering alone. Not all municipalities have this problem, though: one team has eleven members and is on the point of being nearly doubled.

Several authorities say they have the skills and knowledge within their authorities that are needed to implement GI projects. But others are less confident and feel that the GI experience and knowledge needed for effective implementation is missing. As smaller authorities, they have more generalist staff who may feel less technically capable of designing or delivering a complex GI project, and any specialist skill they have may be in high demand from other departments as well.

Finance is a constraint in terms of employing staff, securing the skills needed, or simply funding the projects. The problem is not a lack of ideas, but rather a lack of resources to implement and deliver them. But this is not a universal problem; some authorities are well-resourced, but still do not commit as fully to GI as they could. Securing additional resources from outside may be possible, but requires an allocation of staff and time to develop ideas and draft bid documents. And sustainability demands attention to maintenance resource as well.

Although capacity is a limiting factor for several authorities, and a serious constraint for some, municipalities are finding ways of working round this. One is looking at potential alternative delivery mechanisms such as voluntary sector partners, who might be able to utilise the funding available for approved projects to hire people to deliver them. Another has restructured their team to reorganise responsibilities, and used the NSCiti2s project as the basis for funding an additional post. Two respondents, though, are forced to 'choose their battles', arguing their case only in those contexts where they can win, and where they can then deliver. There are, though, signs that, as green initiatives become more widely recognised as of value, councils may also be more responsive to skills shortages; partnership working between authorities, or across departmental boundaries, enabling the sharing of specialist skills and their costs, may also be a way forward. And there are signs of more creative approaches, where GI elements are argued for, and added into, developments whose focus is not necessarily environmental, but which benefit from green arguments in the business case.

> *'There are clever ways of doing it and there's lots of partnerships around the city who could be helping with it... you need a real team [but] that team doesn't need to sit within the local authority.'*
>
> *Cambridge*

> *'We do not have the brains, we do not have the people, we don't have the knowledge to implement this.'*
>
> *Antwerp*

> *'It's a heavy workload, but the more we take this... to our management, the more they are aware about enlarging the capacity... they are really responsive.'*
>
> *The Hague*

4.3.7 Limited awareness of GI

Although a quarter of respondents view this as a serious obstacle, most rate it a negotiable problem at worst. There is also a sense that awareness is changing, in response to the prominence of climate issues in the mainstream news agenda and because of activity within authorities to raise awareness especially at senior and political levels. One municipality identifies a project from 2014 where a public square was rebuilt entirely in stone, where GI retrofitting is being actively explored; they believe it would not be done this way nowadays.

There is a recognition that the climate change agenda, and the benefits of GI, are complex and that there are areas where even experts disagree. This may make it more difficult to convince decision-makers of a GI-based course of action, especially where politicians are sceptical or divided. The fact that GI benefits are not instantaneous also creates difficulties in this respect, where decision-makers see little gain from their expenditure. In the same vein, a project with visible results such as green

roofing can attract interest because of its visibility and amenity, even if the approach is simplistic and token. And there are still problems of personal priorities, where people will give lip service to the climate agenda but are not willing to compromise over where they park their car.

Where awareness is an obstacle, it is often seen as one that can be overcome through explanation and education. This can be a matter of packaging and emphasis, linking the project to the bigger climate picture that is rising up the news agenda. Tying GI into the wider benefits that are high priorities for local authorities – again, dressing the project up in the right clothes – will help not only at project level but also educate about what GI can deliver.

> *'When they get it, they see the advantages, but before..., they don't see it, you have to convince them.'*
>
> *Bruges*

> *'We've got to be really good at selling the benefits of this.'*
>
> *Southend*

4.3.8 Securing political support for GI

Different authorities have different experiences in this respect, and just one in six respondents say this is a serious obstacle locally. In some municipalities, securing political support for green ideas in developments is not at all difficult, at least in principle, but in others there are issues to be resolved and work to be done before support can be rallied. Some respondents suggest that their politicians give lip-service to green ideas, but don't prioritise them in practice, while others indicate that short-termism is a problem, demanding quicker and more visible results so as to win public support in time for re-election.

Public opinion is seen as an important factor in political support, in that ideas that are attracting public support will also capture the attention of politicians. Public consultation is widely used as a means of demonstrating public support for an idea, as Chapter 7 explains. But the public can also agitate for traditional solutions including in roads or housing; the public view can be a fickle ally.

There are also other priorities with which GI has to compete, one of which is funding. Some municipalities have a particular issue around visible return, the value for money agenda, and over the priority that has to be given to resourcing statutory responsibilities. Where personal enthusiasms of key decision-makers are known, they can be exploited, but there are also political dogmas that are resistant to concepts such as climate change, or focussed exclusively on fiscal matters, and even those politicians who might be expected to favour green projects can be focussed on other agendas, to the detriment of GI. Whilst there are respondents who believe political ideas can be changed, most see these commitments are largely immutable and instead look for ways of defining their projects in terms that will get through the obstacles of ideology.

> *'He knows the importance of GI... but he chooses to follow what the population wants... [he] doesn't see the bigger picture.'*
>
> *Anonymised*

> *'My alderman... has the way of communication to get a project done... [They] can make it happen for another reason than green infrastructure.'*
>
> *Anonymised*

4.3.9 Partnership with other departments

Around a quarter of respondents say this is a serious obstacle to GI in their municipality. Yet working effectively with colleagues in other departments emerges in the interviews as vitally important for GI. GI is a potentially strong component of projects that are not essentially environmental in nature, and there is thus a need to influence the approaches and challenge the technologies being used in other departments – especially, it appears, in housing and highways work, but also in economic development and other disciplines. But NSCiti2s authorities work in departmental structures and their political masters have portfolio responsibilities, and hold budgets, for defined areas of the municipality's work, and need to demonstrate results in their areas. Integration of thinking does not necessarily come naturally or easily.

Several respondents identify what might be termed a silo mentality in their organisation, in which different departments pursue their own agendas and priorities without much reference to other areas within their own organisation. This problem emerges as much less of an issue in smaller authorities with limited workforce numbers, where informal contact and discussion are inevitable as part of the daily interaction within the town hall; in larger, or more dispersed authorities, more formal arrangements seem to be needed to ensure engagement across sectoral boundaries. Since GI as a concept may be struggling to get an audience outside of its own niche, and to influence major developments in areas such as housing or highways, a solution that allows GI to contribute to new project design, and to challenge traditional methodologies, is highly desirable.

Several strategies emerge for overcoming this obstacle. One, especially relevant in the coalition administrations that are more common in Europe, is to use the coalition to negotiate trade-offs between different perspectives, so that different agendas can reach a compromise at political level. This can work, but suggests that collaboration at officer level is limited, and depends on the politicians being able to recognise the value of greener approaches, and on their capacity to negotiate effectively on these issues. Another, which is evidenced in more than one of the NSCiti2s municipalities, and where co-operation is more assured, is to bring the former silos together under the same leadership, both at officer and political level; here, the Alderman has responsibilities for both the green agenda and one of the major operational disciplines, such as highways, housing, or economy. This makes it much easier for those services to co-operate from the outset of projects, and eliminates undesirable compromises.

A third approach, which is visible in both UK authorities, is to develop inter-disciplinary working groups that cross sectoral boundaries and require people to collaborate on significant projects. This brings different areas of expertise together on an equal footing, and can create a powerful coalition of ideas. Success of course depends on the willingness of people to collaborate effectively, but respondents are quite positive about this way of working, indicate that officers and members are co-operating, and suggest that it means voices that might previously have been overlooked are now being heard.

A less structured possibility is for an individual to establish a level of credibility and expertise within the organisation to the point where other departments want to get them involved and onside with their project, either to gain their input or to avoid their later criticism. This solution seems much more vulnerable to workload issues and to personality traits, and whilst effective, may therefore be less sustainable or replicable.

'It's a slow, incremental process... bit by bit you make your colleagues more aware of air quality, biodiversity... it's important that there is more integrated thinking.'

Kapelle

'A large part of my work is building bridges with other parts of this organisation.'

Essex

'It's a coalition of two different parties... you have to go and make compromises [between] opposing views.'

Antwerp

'We have multi-disciplinary teams across the business as a matter of course, on a whole range of things. It's normal, day-to-day now'

Southend

4.3.10 National planning policy

Although one in three respondents identify this as a serious obstacle to GI in their city, a rather higher proportion (two in five) said this was not a problem at all. Respondents nevertheless took the opportunity to comment on the level of support provided for local GI from higher levels of government. Although the question was directed at national policy, it was interpreted as including regional and provincial levels of government as well, in areas where these operate.

Expectations of higher-level support seem fairly muted, on the whole. Higher authorities may have made statements or commitments, and perhaps even set targets in areas like carbon, but these are widely criticised for being too weak, too vague, or insufficiently grounded in reality. The Flemish regional government's climate strategy was published at the same time as interviews were taking place in Flanders, and was therefore prominent in responses; it was widely criticised by respondents as being half-hearted, insufficiently ambitious, and hoping that someone else would solve the problem. There is also a perception that regional government in Flanders fails to engage sufficiently with local issues and realities, and largely leaves green interventions to local and provincial levels, resulting in fragmentation of delivery when co-ordination might be helpful. Relationships between local and provincial government in Flanders seem much more effective and collaborative. But nevertheless, there is an acceptance that the higher levels of government in Flanders do support GI at least in principle, and a recognition that the highly urbanised and trafficked nature of the region makes it difficult, practically and politically, to take more drastic action.

The relationship between higher-level authorities and local government is different in different jurisdictions. In the Netherlands it is largely a passive relationship that allows local authorities the freedom to act as they see fit; this is only an obstacle in the sense that support may not be as pro-active as the municipalities would hope for. A National Vision has been published, but opinion on this is divided; one municipality views this as essentially benign, useful in providing a supportive context, while another sees it as a document that can largely be ignored because it contains only vague aspirations and leaves responsibility in local hands. The absence of compulsion is not an obstacle, but is also not providing any advantage; it allows local government to take the credit, but also requires problems over requirements to be resolved at local level. The French planning tools are criticised for being weak, outdated and ineffective in addressing both newer issues such as heatwaves and longer-standing issues such as urban sprawl.

In the UK, there is a National Planning Policy Framework that has a significant rôle in GI projects. It has recently been strengthened in terms of environmental issues, replacing weak, hopeful aspirations with harder ambitions and targets. As a statutory document it forms the basis for imposing requirements on development and is a reference document when planning decisions are appealed. But welcome as this is, GI work is still constrained by the policy's high-level nature and lack of lower-level targets and obligations. Nevertheless, one authority is using the principles embodied in the framework to highlight national support for the ideas embodied in local project proposals. Another, though, sees a need for local planning policy to be more closely integrated with the national framework.

'[National policy] needs to be firmly incorporated into [local] planning policy... if we really want to go for this, [local planning] needs to be essentially designed around it.'

Southend

'They'll catch up later. That's just... ridiculous. So even when your goals are not high enough, you won't take the necessary measures to catch up.'

Antwerp

'The National Vision... makes believe that with our new environmental act that paradise will land on earth very soon... all the expectations come down to local government with no budget.'

Anonymised

4.3.11 Public scepticism

Just one in eight respondents log this as a serious obstacle for a GI project in their locality, but over half identify an obstacle that still needs to be overcome. While there is movement in public attitudes, scepticism still exists, and poses problems for some municipalities.

Several respondents note that the sceptical voices, the voices of protest that accompany the launch of some ideas, are from minorities, and in some cases very small minorities. In one municipality, a lone, but very loud and forceful, voice has brought a project into doubt by using mainstream print, local tv and social media to air grievances. Tree projects may be welcomed in principle, but will prompt objections from those who fear the trees will cause leaf litter or bird poo on their cars and footpaths, or reduce light into their homes. Some individuals will inevitably see greening projects as threatening to some aspect of their everyday comfort, but these need not necessarily influence the decision. There are, however, some objectors who are also rich, or powerful, and who have what appears to be undue influence over decision-makers. Thus, in Southend, for instance, there is an influential lobby who would object strongly to any change from a city centre parking space to a green installation, which might erode the economic potential to be gained from visiting motorists.

A peculiarly English dimension of scepticism is value for money. A project may have strong green credentials and excellent objectives, but there will be UK people who object because they don't see value for money, or because they think the money might be better spent elsewhere. It suggests that the true value of these schemes is not being well articulated. But GI can also be an issue that prompts extreme positions, with some who will fight vigorously for any initiative in this area and defend any tree against removal, while others are equally vehemently opposed to greening on principle, even to the point of denying climate change or suggesting that GI initiatives make so little difference worldwide as to be meaningless.

However, most of the public seems to be onside most of the time, and those who are doubtful can perhaps be convinced by explanation or informal education – provided this is properly crafted. One strategy is to engage communities, and perhaps especially schools, in greening projects, making them more difficult to object to. Others can be convinced by seeing and experiencing the benefits of greening, winning them over from more ambivalent positions. Still others are influenced by high-profile news agenda items, and background pieces. But even these messages can fall on deaf ears, and some Flanders people enjoy the heatwaves and fill their swimming pools rather than worrying about the temperatures. And there remains a perception in some quarters that the climate change agenda is largely owned by affluent, white, well-educated people, rather than by the wider public.

So, one of the main issues in scepticism is the reluctance of people to change their own behaviours or attitudes, even if they accept the principles behind greening. There is a sense in some municipalities that the authority needs to give a lead, and then some other people will see the benefit of an initiative and act for their own part as well – as in Kapelle, where there are expectations that the NSCiti2s project of replacing tarmac with permeable road surfacing will inspire homeowners to take a similar approach with hard surfaces on their own properties.

'Those who engage with the planning system, they tell us all the time that this is what they want.'

Cambridge

'It's only when it's tangible, or when children are involved.'

The Hague

'There is not a single day you [don't] hear in the news or in the papers, you read something, or you hear something about climate change, people are more and more aware.'

Kapelle

'There is not an awareness that people have a responsibility themselves, that they... have to change some aspects of their lives.'

Bruges

4.3.12 Partnership with other organisations

Only four respondents suggested that this was a serious obstacle in their municipality. It is interesting that respondents see external partnership as less of an obstacle than collaboration within their own municipality, though this does not mean that there are not challenges in this area that need to be addressed.

Partnerships may need to be developed in a variety of ways. In multi-layered governmental structures such as those in Europe, co-operation is often needed between the different levels of government, or with different branches of government, because responsibilities are fragmented. An example is Lille, where planting a street tree requires collaboration between the municipal authority and its metropolis counterpart. Co-operation can often be secured, but there are sometimes political, legislative or procedural hindrances that result in conflicting priorities. Relationships may be needed with other statutory bodies such as water boards or environmental agencies for permissions, or because they can provide funding or add value in GI projects.

Voluntary bodies can be influential at a variety of levels, but are important at community level where their backing or opposition can determine whether or not a project proceeds, and also at national level where they have a different relationship, a different level of trust with their constituency that adds value to their endorsement of a project. Some cities have a plethora of voluntary bodies, who may or may not be able to co-operate with one another, let alone with the municipality as well. And relationships with industry or with universities are also seen as potentially useful to those developing GI projects.

All these relationships are built around the achievement of shared, overlapping, or compatible, objectives. This may be less likely with neighbouring communities, whose priorities lie with their own residents, but is especially important for projects that cross boundaries, such as transport-related initiatives, where co-operation will make the difference between success or failure. There is also a growing awareness of shared concern, recognising that environmental issues have no respect for administrative boundaries, that is starting to bring some communities into a new collaborative relationship around particular initiatives. Progress in this respect may be slow, but one NSCiti2s authority is alert to the possibility of this type of inter-agency, inter-community relationship producing a useful network which may be exploitable for other projects and purposes. These relationships may not be easy to develop or sustain, however, perhaps especially with larger, more complex projects where objectives may diverge more. They take time and effort to develop, and sometimes these resources are not readily available. But where they are successful, they seem to make a noticeable difference to project success and impact, and can also convey political advantages in demonstrating a willingness to engage more widely and outside the box.

'A lot of it is about how you engage with people, getting them to understand what you're trying to achieve, and how everyone's going to benefit from it.'

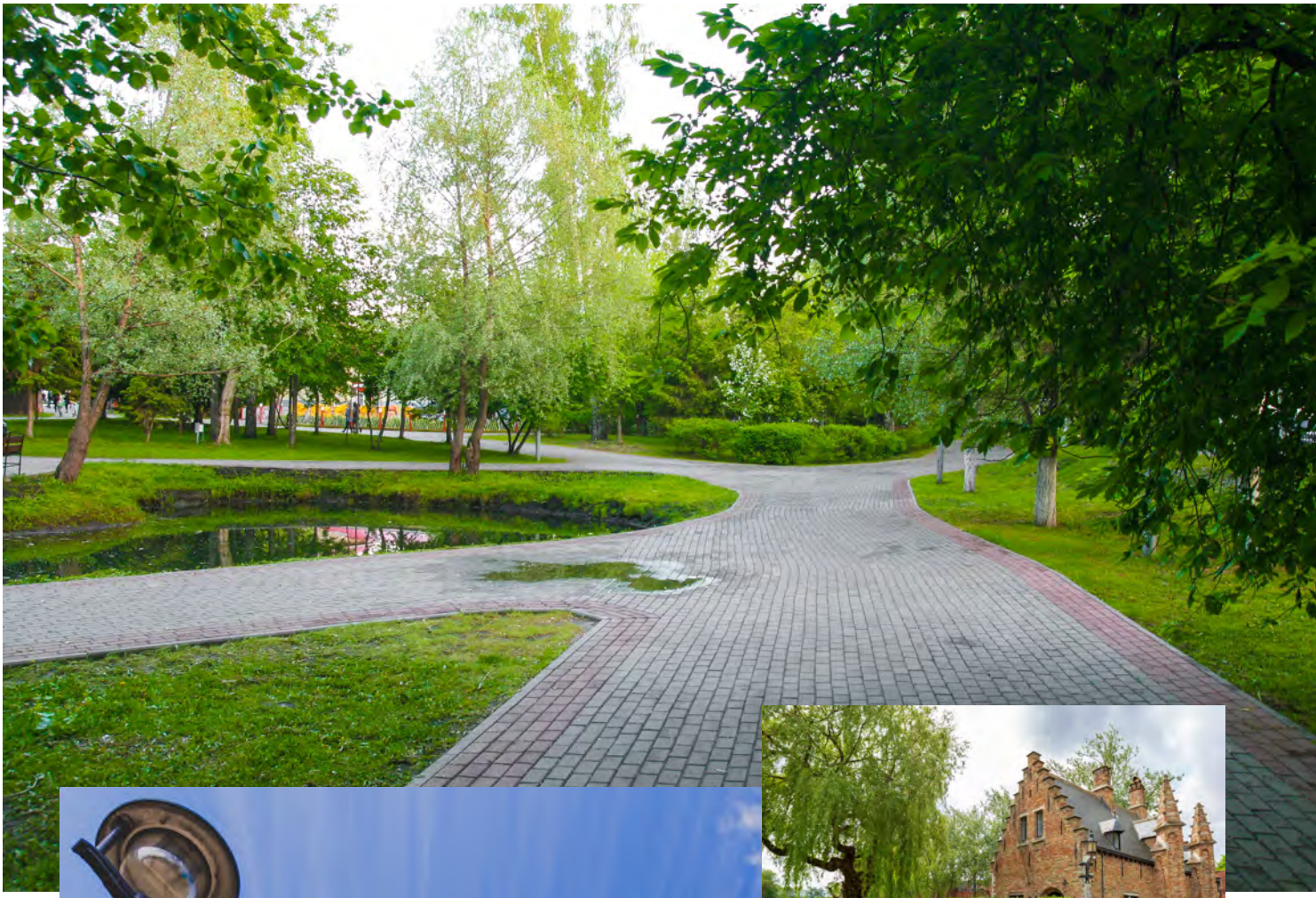
Essex

'We've all sorts of ... bodies [in the city] ... from a nature conservation point of view. And the university is doing a lot of work worldwide on... these issues... If you can't do [partnership] here, you can't do it anywhere.'

Cambridge

'Municipalities and province didn't really work together, but with the Delta programme... the thirteen municipalities... the province and the water board they all work together to a... strategy on climate adaptation... and that... is having benefits in other areas.'

Kapelle



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5 Finding the funding

The next three sections of the report look at the process that takes a project through from an idea to an approved project. They explore respondents' understanding as to how the funding is found, the argument and justification that is brought in to support a project, and the process that leads up to an approval decision.

5.1 Funding sources

Funding for GI is needed for two essential purposes: the capital costs of creating the project in the first place, and the ongoing revenue costs of maintenance and upkeep. Respondents identify a variety of different sources as potential GI funders, including:

- The local authority's own budgets
- Funding from other levels of government
- Funding from other statutory bodies
- European Union funds
- Funding from developers
- Funding from other private sector interests
- Funding from voluntary and community organisations

A GI project can be funded from a single source, but it is more likely that it will need to attract funding from a combination of two or more sources, assembling capital funding packages on a project-by-project basis; there is rarely a standard pattern in this respect. Interestingly, although the range of funding sources mentioned by respondents is very large, most gave only one or two examples of how these are utilised, suggesting that respondent awareness of the potential for pulling funding behind any given initiative may be limited.

5.1.1 Local funding

Funding entirely from within local authority budgets is the simplest approach to GI financing, but is dependent on the municipality's wealth, and the limits that may be imposed by its budget and its other responsibilities. All the authorities in this study report that they fund their projects at least partly from tax revenues, and availability is therefore affected not only by budgetary priorities within the municipality, but also by property values in the community and the level of tax levied. A poorer municipality, with lower-value housing and less well-off residents, will tend to raise less revenue and be able to do less without external support. The capacity to self-finance a green project thus varies widely and there are differences not only by country, where different taxation and spending rules apply, but also between individual municipalities in this study.

In Lille, respondents indicate a growing awareness of the importance of GI, and a corresponding improvement in the availability of municipal funds for this kind of work. Bruges presents itself as largely self-sufficient in financing GI, using its own taxation revenue, but as an NSCiti2s city, with other EU projects under way, it self-evidently exploits EU funding opportunities as well. Nevertheless, Bruges' in-house budget for GI is substantial. In the Zuidrand however, with its smaller municipalities, co-financing is usually essential. The Hague is a larger city with budgets devolved to districts that can finance smaller initiatives, but also relies on co-financing for larger capital projects. However, The Hague also has a substantial revenue budget set aside for maintenance, and seems capable of

absorbing additional maintenance obligations with little argument or negotiation, with respondents implying that this aspect of a project can be taken for granted. Kapelle, as a small municipality, has to work within tighter financial limits and relies on co-financing for larger works, and on negotiating maintenance arrangements with the relevant services in advance.

UK authorities report severe budget reductions over the past decade, and are also restricted in their tax-raising capabilities, meaning that local funding for green projects has become increasingly difficult. So, although Cambridge is a relatively wealthy city as regards capital spending, its revenue budgets are stretched, while Southend, as a unitary authority, has to finance an increasingly costly social care programme. For capital funding, one major source in UK authorities is a council-wide capital programme, which invites competing bids for a pot of money and uses a scoring system or other mechanism to decide which projects to support. This will normally require a business case in support of the bid, with an indication of how the project will be sustainable going forward – in other words, for a GI project, how maintenance will be funded.

Another reported solution is to incorporate GI into larger capital projects, such as roadbuilding or housing, where the costs are more easily absorbed, and where other departments' budgets can be used as co-financing. Collaboration with neighbours also has a rôle: in Cambridge, a strategic approach is being enabled by a partnership between neighbouring authorities working on issues of shared interest such as greenways, while Kapelle is part of a partnership of Zeeland authorities with shorelines, and mutual concerns, on the Schelde estuary.

Some local taxes are hypothecated, meaning that they have to be spent in the service areas where they were raised. In the UK, parking charges and fines must be spent on parking, roads and footpaths (including maintenance), and transport; respondents indicate that this is a possible source for GI projects that address ecosystem services such as cycling and walking, and permeable road surfaces. In the Netherlands, taxation raised through sewerage charges has to be spent on underground services, a requirement turned to advantage in Kapelle where sewerage revenues were allowed as match funding for the permeable surfaces project, interpreted as a drainage initiative. Since the sewerage revenues were already earmarked for drainage in this locality, the NSCiti2s project achieves considerable added value.

'Because green is growing as a priority, there has been a progression towards making funds available.'

Lille

'We are a wealthy city; we have big budgets...How do we fund it? We just have our funds available.'

Bruges

5.1.2 Funding from other levels of government

Different governmental structures exist in the different NSCiti2s jurisdictions, and these are reflected in responses. In Belgium and the Netherlands, the municipalities sit beneath three other levels of government – provincial, regional, and central – all of which have the capacity to become involved in GI projects. Provincial governments are identified as supporting projects led by municipal authorities in the Zuidrand, in Zeeland, and in The Hague, through arrangements that require a local contribution. This can be in cash, but can also be an in-kind contribution such as the deployment of municipality employees to work on project installation or delivery. The Flanders regional government is identified as supporting some specific types of GI project in their part of Belgium; this support can sometimes make the difference for a local project, or for one which crosses municipal boundaries, such as a

cycle path. In France, Lille shares responsibilities for public works within the city boundaries with the Métropole Européenne de Lille, which manages highways and pavements within the city, so that any green installation in a street has to be negotiated with the Métropole, which is also a potential source of co-financing. Also in France, state subsidies from central government are used as match funding for EU initiatives supporting local projects. In the Netherlands, there is a recurring central government fund to support innovation in climate adaptation, which The Hague has unsuccessfully applied for, and a separate, smaller regional fund, whose support The Hague has succeeded in attracting, while a provincial fund is supporting work on the dune system at The Hague. Kapelle also benefits from national government support, albeit in fairly small amounts.

In the UK, there are no regional authorities, so municipalities sit directly under the central government. However, responsibilities can be divided between different authorities, or combined within a single municipal entity. Southend and Cambridge, the two NSCiti2s authorities, have different levels of responsibility and autonomy. Central government support in the UK is obtainable, but tends to be responsive rather than pro-active; the initiative has to be taken, and led, by the municipality. In Cambridge, central government is funding a strategic partnership of local authorities working across administrative boundaries to deliver housing, economic development, and green objectives such as sustainable transport and air quality measures; the funding is augmented from local sources but also from other central government programmes. Essex seems to rely heavily on government grant funding, and expects to do so more after Brexit; water authorities in the UK are private companies, but can support environmental work financially.

> *'Generally, it's going after grant money and working with other partners... potentially, if another partner is doing something, we could pool resources or piggyback.'*
>
> *Essex*

> *'We have regional [authorities] that can support projects for water buffering or increasing biodiversity... there are many opportunities to get subsidies.'*
>
> *Antwerp*

5.1.3 Funding from other statutory bodies

Respondents identify other statutory bodies whose responsibilities mean that they are potentially interested in GI projects that address their objectives. Many mentioned environmental agencies, water authorities, or both, in this respect. So, for instance, the Flemish Land Agency is supportive of projects on urban fringe biodiversity projects, and on water quality and flooding initiatives, including the reopening of watercourses. The UK's Environment Agency invests in GI projects to further its aims of biodiversity and flood prevention, and Natural England is also a potential partner in biodiversity projects. Environmental agencies and water supply authorities are active funders in Belgium and the Netherlands, on projects which address their objectives. In The Hague, the Water Board is interested in the city's water storage project, as is the (separate) drinking water supply authority; the Water Board wants to part-finance the project, to be able to study the potential of the technique being used, while the supply authority is providing knowledge support, and is interested in taking on longer-term management responsibilities. The Water Board also works in the Netherlands to support coastal defence, much of which is natural space. L'Agence de l'Eau is a national water authority and a potential funder in France, and bodies like the French National Museum and National Conservatory can help with appropriate initiatives.

Although there is no regional government in the UK, regional non-governmental bodies exist and manage certain central government funds. Southend works with the Southeast Local Economic Partnership, a regional body promoting economic development and regeneration initiatives across its region and managing three growth funds on behalf of central government. Cambridge has developed GI on its riverbanks in association with the statutory body that manages the river and its usage, and also accesses funds from the local water authority for community-based project, which can also be locally managed, reducing the burden of management for the council.

> *'There's usually small pots of money you can bring in... it's pretty easy to get £5,000 to do a small piece of work.'*
>
> *Cambridge*

> *'We got a subsidy from the Water Board, because they are interested in the [water storage] technique we are implementing; and [non-financial support from] the drinking water supply authority.'*

5.1.4 European funding

All the municipalities involved in this project receive European funding to support their projects, so it is perhaps unsurprising that they see considerable advantages in being able to access these funds. Respondents indicate that funding from the EU allows them to deliver larger-scale, or more ambitious, projects than would have been possible without this support, while some municipalities have built in additional objectives so that a project more clearly fits the criteria for European funding. The EU is seen as setting high standards both in terms of the project deliverables, and in accountability. Some NSCiti2s cities make extensive use of European funding programmes, but at least one authority relies on access to professional specialist advice for help with the development of funding bids and reporting.

Respondents identify downsides to EU support, however. One is the mandatory requirement for an additional source, often (though not always) on a euro-for-euro basis. Another is the workload that comes with EU funding, in terms of reporting, monitoring and evidencing spending. And a third, with particular implications for smaller authorities with limited reserves, is that the European funding is paid retrospectively, so that the authority has to spend up front and recover from Europe afterwards, perhaps several months later.

The UK NSCiti2s partners face a future without access to EU funding, and as yet no indication of what, if anything, might replace it after Brexit.

> *'[One local municipality] put a little bit on hold, because they say we have to put so much money in beforehand that we nearly can't finance that.'*
>
> *Kapelle*

> *'We are happy that we can do more in quality because of European funding... we have more time and more money to spend on stakeholder engagement... and to make a more quality [project].'*
>
> *Anonymised*

> *'In the past, it would be Europe was a big funder, which is now going to change. Massively.'*
>
> *Essex*

5.1.5 Funding from developers

A range of possibilities emerge from the interviews that exist to persuade, require, or encourage developers to contribute to the costs of greening a development. One is to impose planning conditions that require an allocation of green elements within a development, or alternatively to offset the impact of the development by contributing to green provision elsewhere in the locality. At least one authority has a matrix which they use to score developments on criteria that include green attributes, although one respondent suggests that the imperative of securing the development over-rides any weaknesses that may emerge through the scoring process. Another municipality has established a developer group to promote developer engagement with a local nature initiative, which they suggest is improving developer understanding of biodiversity; the fact that the council is in the process of a major housing expansion means that developers are keen to be seen as co-operative.

There is an argument that incorporating green elements in a development can increase the price of the units that are nearby; but many respondents suggest that this does not seem to cut much mustard with developers, who are more motivated to build housing units, and when an authority is under pressure on housing numbers, there is little incentive to press the point very hard. Developers who are willing to look at green elements may insist that the municipality pays for these, or they may simply refuse, and the authority may not have any basis for insisting otherwise. Other than in public sector contracts, the developers take, or transfer, the risk that the revenue achievable through selling their development will be sufficient to cover the costs incurred.

In Lille, there are just two major developers that work with the municipality. One is an SEM, a mixed economy society funded by public or private investors, while the other is an SPL, a local public society where the main backers are municipal and other public bodies, which clearly then have a greater say in the nature of these developments.

The UK has a planning regime which calls for developer contributions in relation to a development above a stated size, ostensibly to fund additional infrastructure needs generated by the development, including green space, drainage and other potential GI projects. These provisions can also include the costs of ongoing maintenance, for a time-limited period, such as twelve years. Cambridge has taken an imaginative approach to maintenance using these contributions to create an investment fund, generating interest that can be sufficient to fund maintenance without drawing down capital. Essex has used major road-building projects to apply environmental conditions which the contractors have to meet, for instance in noise mitigation or in environmental balancing.

'In their development, they had to create a playground, but they donated ... money to renew an existing playground [instead]. It happens [that way] sometimes.'

Antwerp

'I'm a fighter... I say to the developers, stop... you need to do more, because it is good when you do more [green]. [What] is described in the development plan, I make it bigger. But sometimes the [plan] is too soft, and not smart.'

The Hague

5.1.6 Funding from other private sector interests

The UK has some privately-run lottery funds that have been accessed to support GI-related projects. Many of these funds are off-limits to local authorities, but some can be applied for, including a heritage fund which supports conservation of historic buildings and landscapes, and which can thus be brought into play for GI as part of conservation measures; Cambridge reports making use of these opportunities. Private sector funding is also available to councils in the other NSCiti2s countries, but respondents discussing these note that they may have conditions attached that make acceptance a political decision, and possibly a risk. Both Antwerp and The Hague face problematic decisions about accepting money from companies with questionable environmental records.

This, and the wider issue of philanthropy, are discussed below (Section 5.2).

5.1.7 Funding from voluntary and community bodies

Although several respondents mention support from voluntary or community bodies, this tends to be quite small-scale and is often the product of a partnership between the local authority and a community body; the support received may be in cash, but is often in voluntary time and effort.

In Bruges, some open spaces in the city are owned by charitable bodies such as religious institutions that make their grounds available for public enjoyment, in return for maintenance from the city workforce. In Cambridge, income from fishing and boating licences is used to develop GI in connection with the river, and the local Wildlife Trust is also a partner in land acquisition for nature. The city and other partners are also part of a National Trust project to improve local green space, which may help their NSCiti2s project by funding an increase in capacity within the authority. Across the UK, the non-governmental body EnTrust manages a fund formed from taxation on waste disposal, that can finance local community projects.

Several Belgian respondents mention the voluntary body Natuurpunt as a major player in environmental and conservation initiatives, and a major beneficiary of public and business donations. It is also a large landowner in its own right, managing nature reserves, woodlands, country paths and scenic recreation areas, and claims to work in every municipality in Flanders, as well as at provincial and regional level. It is not a funder of municipal projects but can act in concert with municipalities, as in the Zuidrand where it worked with local authorities to prevent a road project by simply buying the land needed, and then organised a mass community tree-plant. A number of Antwerp respondents mentioned this project, which remains controversial because there is apparently still interest in building the road. Natuurpunt are seen by at least one smaller municipality as having a level of expertise in environmental work that they do not themselves possess; their ubiquitous presence in Flanders is also interpreted as evidencing public support for green objectives.

> *'Natuurpunt is a really strong partner when it comes to green space... they have a lot of money; they can do a lot of things.'*
>
> *Antwerp*

> *'There's funding out there for the right projects. Funding isn't necessarily an obstacle for the right project'*
>
> *Southend*

5.2 Funding options

As the NSCiti2s project had already commissioned a report on non-traditional funding sources from an external consultant, the opportunity was taken to ask whether respondents had come across any of these opportunities before.[9] The list of opportunities was as follows:

- Green loans from banks
- Green bonds from government
- Privately-owned public spaces
- Policy performance bonds
- Impact investments
- Crowdfunding
- Philanthropy

Generally, respondent awareness of most of the mechanisms listed was non-existent, other than among those who had attended an NSCiti2s presentation covering this ground previously. Some respondents suggested that mechanisms like these would be organised at a much higher level in their authority, and would not involve them. Others were drawn to mentioning alternative models of management of open space, such as the community trust models being deployed widely in the UK, which are management and revenue arrangements rather than capital funding for green provision. Private sector green space was also mentioned in the context of an exclusive development, with no public access. One UK respondent recalled a Green Investment Bank that funded a change to low-energy street lighting, but thought this was now defunct.[10]

There are exceptions, though, and one respondent in Antwerp noted that their authority uses performance bonds to lock developers into commitments within the approved plan, including green elements; a failure to deliver these commitments releases the funding in the bond to allow the authority to do the work itself. It would also, presumably, make it much harder for the developer to secure an underwriter for any future bond.

Privately-owned public spaces exist in several authorities, but have merged over the years through philanthropy or permitted use rather than as a basis for providing new green space. In The Hague, for instance, there is extensive green space to which public access is permitted, although the estate in question remains in the ownership of the Dutch Crown. In Cambridge, the University owns considerable public space and may allow public access. Some Flanders properties are being explored for transfer into the public (or voluntary) realm, as a means of securing the heritage characteristics as well as public access. None of these responses, however, represent what the report author had in mind under this heading.

Of greater relevance is the privately-owned public space created by developers in the Cambridge station development, mentioned by one respondent there. Here, the green space has proved inadequate for the number of housing units created, and has been problematic to manage, while the adjacent civic space, also privately-owned, has limited the Council's capacity to intervene to address traffic issues and pollution concerns.

9 Mills, Simon, 'An examination of the financing options available to local authorities to fund urban greening programmes' (Unpublished report, Zyen Group, 2019; available from https://naturesmartcities.eu/library).

10 The bank mentioned in this response was set up in 2012, and was in fact sold by the UK Government to a privately-owned investment group in 2017.

Two respondents suggest that they have not investigated mechanisms like this because their authorities have adequate funding to deliver what they need to, while two others suggested that this type of approach to finance was alien to them, and that they would continue to look to public sector support. A UK respondent was concerned about the likely cost of private sector funding, its impact on council tax and revenue budgets, and the administrative burden, and thought the authority would instead look to existing public sector opportunities such as the Public Works Loan Board.[11] An Antwerp respondent requested a copy of Simon Mills' report to investigate these more advanced finance possibilities further.

> *'I haven't really looked into them because I think in the Netherlands it's not common to do such things, it's mostly a subsidy from the government or Europe, and our own money.'*
>
> *Kapelle*

> *'The more advanced funding mechanisms on this card aren't needed, there is already money to support the projects [we] have decided to do, and complex financial arrangements are superfluous.'*
>
> *Lille*

Only crowdfunding and philanthropy were more widely recognised as funding concepts. Respondents generally see **crowdfunding** as a mechanism suited to smaller local projects, but inappropriate (possibly even illegal in Belgium) as a local authority tool. They say that a crowdfunded project essentially needs to emerge from, and be led by, the community, and is a means of raising funds for something that a public sector body would not finance. They also raise concerns over the expectations attached to crowdfunding, where a donation may also imply some say in what happens, or raise issues of financial accountability. Nevertheless, Lille has used crowdfunding to finance a community beehive project which has proven very successful both in promoting beekeeping and in raising revenue through honey sales. And Cambridge is looking at using crowdfunding to support its NSCiti2s tree-planting project, through an arms-length tree fund, and has encouraged crowdfunding as a way to raise finance for a small-scale recreation project and a community garden. Outside the NSCiti2s boundaries, Plymouth is known to have won an award for its use of crowdfunding alongside its use of CIL, a levy on developers.[12] From what other respondents say, these initiatives may be of wider interest to NSCiti2s partners and may be capable of replication elsewhere; Southend is already in discussion with Plymouth, and Cambridge is seeking to follow Lille's lead on beekeeping.

Lille has also used a technique called **Participatory Budgeting**, which involves the creation of a fund with a stated purpose, the invitation of bids from projects that meet that purpose, and then a citizen vote on which projects merit financing from the fund. Like crowdfunding, this is a mechanism suited to small-scale, community-led projects. It has been widely used around the world, but is no longer the force it once was in the UK and Europe.[13]

11 These funds are, since February 2020, managed directly by the UK Treasury; the Board no longer exists.

12 CIL, the Community Infrastructure Levy, is a charge levied by local planning authorities in England and Wales on developments above a threshold size, to fund infrastructure provision. A proportion of the CIL must be spent locally to the development, with the remainder available to be spent within the authority's boundaries.

13 Participatory Budgeting is described more fully in Ganuza, E and Baiocchi, G., 'The Power of Ambiguity: How Participatory Budgeting travels the globe', *J. of Public Deliberation*, 8.2, December 2012, Article 8.

'If you believe in [the project], you shouldn't need to be going cap in hand to people, you should be able to fund it.'

Cambridge

"[We] might use crowdfunding for a few hundred or a few thousand euros, for a small space, such as the project placing beehives in public spaces.'

Lille

Philanthropy is a widely recognised concept, although the days of generous benefactors are thought to have largely passed. The modern equivalent, of corporate social responsibility (CSR) and the desire of business to be associated with environmentally attractive projects, is not reported as being grasped to any significant extent by NSCiti2s partners. UK respondents mention small-scale initiatives such as the sponsorship of roundabouts, essentially a form of paid-for advertising rather than a strongly green association, and business donations to new public structures in parks and the like.

But respondents in each of four cities note that there are discussions taking place in this area. In Antwerp, two large chemical companies are keen to support environmental projects, to offset some of the environmental cost and reputational damage of their operations; one is redeveloping its worksites, and offering land thereby released for environmental purposes. A philanthropic partnership between business, academia, and local authorities in Antwerp is in its infancy. In Southend, the airport badly needs a better public image, and wants the local authority to approve plans for expansion, both of which might be helped by philanthropy. And in The Hague, an offer of philanthropy from one of the city's largest businesses is being debated; it is problematic, because the business is seen by many as a major polluter. An industrial concern in Zeeland which donates to local communities is viewed by some with mistrust, as seeking to gain undue influence. Respondents express concern that private sector philanthropy might be interpreted as a means of 'greenwashing' undesirable activities elsewhere, purchasing influence in local authority decision-making, and defusing criticism of the business; they suggest that it is not a panacea without its complications.

Voluntary bodies can also serve as an indirect from of philanthropy. In Belgium, Natuurpunt is a major player in nature conservation and attracts significant funding from individuals and some major businesses, which is ploughed back into nature conservation projects, including land acquisition. The organisation is thought to have become the main vehicle for philanthropic support for the environment from Belgian industry, with a better PR return for the company than support for a local authority would offer. Essex is setting up a Green Foundation, an independent body to serve as a vehicle for sponsorship and charitable funding at arms' length from the authority itself; it already has a similar venture in the field of rehabilitation.

In Cambridge, the main beneficiary of philanthropy is the University, with large-scale funding for new research establishments, but one respondent suggests that there may be scope for strengthening the relationship between the colleges and the city too. There are also opportunities linked to the developers building new housing in growth areas, who are keen to demonstrate their environmental credentials and to present themselves in a different light.

'[Company name] is compensating more than they have to... they want to give a signal that... they're doing more... they recognise the societal impact of that.'

Anonymised

'I had a meeting with a local company...who wanted to see what they could do to help with our green initiatives... and obviously get themselves some lucrative publicity and credibility.'

Anonymised

5.3 Examples from other authorities

Responses suggest that smaller authorities may struggle to look too deeply or systematically at funding opportunities. Keeping on top of this changing world can be quite a challenge, and demands a resource that is often not available to the smaller municipality, meaning that they rely on informal channels and incidental familiarity – or on learning from other authorities' experience and example.

Respondents were therefore asked to indicate whether they ever look at how other local authorities fund their GI projects, and they replied with quite mixed results. Some do look for ideas from their counterpart authorities, but they give the impression that this is fairly *ad hoc* and not undertaken systematically or regularly, and the majority of respondents confess that they do not do this research, arguing that they have little time available to do more than focus on their own projects and issues, or that they are self-sufficient enough not to need to do this. Some, though, realise that there might be advantages in doing so, and regret that they have not looked further afield, or that workload pressures have limited the kind of exchanges that might have taken place in earlier years. One respondent says that their city is a pioneer and champion of its way of working, and rather than looking at what others do, expects others to be looking at them for inspiration.

'I'm sure [name] does, because he always looks at every opportunity...if there's a particular project, they would look to see who else... has done it, and...how did they do it, how did they finance it, that kind of thing.'

Southend

'We don't have any funding problems, so that's why I don't look at how the others do it.'

Anonymised

5.4 Difficulties in funding

Respondents were asked whether they found securing funding for a GI project more difficult than for other types of initiative. Although there are a few exceptions, most respondents feel that green projects are either no more difficult to fund than other projects, or in some cases easier to finance. Public opinion and citizen pressure mean that green projects can be popular, increasing their chances of success with more publicly-responsive administrations. Green projects can also be promoted as delivering on strategic commitments to climate change or carbon reduction, and can be piggy-backed on to other initiatives to add value.

> *'The big cities... are smarter... especially for big infrastructure projects... I think we have to learn about it.'*
>
> *The Hague*

> *'We have looked at funding models... you did a report for us on future potential models... a while ago, but still relevant... to be fair, nothing much has changed.'*
>
> *Cambridge*

Nevertheless, respondents acknowledge that arguments still need to be made, and evidence produced to justify approval. The larger projects inevitably create funding complexities. But if a project has outcomes that are tangible and visible (or if it can be described as such), it will appeal sufficiently to decision-makers to be fundable. More controversial projects may still struggle, and depend on the decision-makers' judgment between the gains to be made from a green project and issues such as cost, or loss of parking space.

Some projects may attract external finance with match-funding conditions attached, and although these can create more issues, respondents say that municipalities are attracted by the possibility of more significant outcomes, and by an improved perception of value for citizens in using tax revenues. Respondents in both Cambridge and Kapelle report positive outcomes in this respect.

> *'[It's] not really different from any other subject. If it's tangible, it's easier, if it's more abstract then it's harder.'*
>
> *The Hague*

> *'You have to make it clear that it's important... you have to get enough arguments to convince [the politicians] ... but they want to realise things that are visible and attractive... [and] then it's more easy to get the financing.'*
>
> *Antwerp*

Photo: Lotte Meuleman

6 Assembling the evidence

Respondents were asked about the evidence they put forward in a business case, or a project proposal, to encourage decision-makers to approve the proposition. Their responses are analysed first in terms of the general approach being taken to making the case for their project, and then to key dimensions of that evidence: the financial evidence needed, the need for measurement and monitoring of impact, and the potential for connecting the proposal to the wider ambitions of the authority.

6.1 The approach to evidencing

Approaches to evidence reflect the decision-making culture that prevails at the authority (or with the individual decision-maker) and the need to frame the proposal in a way that will maximise the opportunities for success. In some authorities, it seems better to identify as many benefits and gains from a project as possible, in the hope that if one does not resonate with one of the decision-makers, another one will. But in other authorities, where the key decision-maker has known enthusiasms, it is more beneficial to focus on those gains, with other benefits either left out of the rationale altogether, or added as an afterthought. And even if the strategy is to go with multiple arguments, the order in which they are presented and the emphasis they receive may be the difference between approval and rejection.

Taking this further, there are respondents whose strategy is not to be fully forthcoming about what they expect from the project. They take the view that the more information a proposal offers, the more opportunities it provides for rejection. Alongside this, some respondents suggest that their decision-makers are not interested in, or motivated by, complex arguments or detailed briefings; what they need is a short, pithy summary in clear and simple language. For these decision-makers, science is superfluous and over-complicated, but for others it is a vital element in the business case and acts in a confirmatory way to support the gains being claimed. Some decision-makers want only the facts – what the proposal will deliver – rather than vaguer promises of future benefits, which they may feel they can work out for themselves. Some decision-makers will want to see links to key corporate objectives, or priorities, such as making a location more attractive, or improving local quality of life, while others seem able to overlook these. The essential message conveyed by respondents is thus: know your decision-maker, what they expect and are responsive to, and tailor the argument accordingly.

This suggests there may be advantage in dressing the project up in different clothes, a stratagem discussed further below. GI projects are perhaps especially suited to this approach, since many offer the multiple benefits that were identified in Chapter 2 as part of decision-makers' perspective on GI, and can deliver at the higher end of the priority list discussed in chapter 3; a project targeting a lower priority can be made to look like one at the upper end of the local priority list. Some respondents use the mantra 'People, Planet, Profit' as a rule of thumb for GI, and as a basis for setting out the likely gains from their project proposal under all three headings, but others will make choices based on their appraisal of the mindset of the person making the call.

In some authorities, there is a political dimension to consider. Some GI projects make for good public relations, and for photo opportunities, and these can make a project attractive when a politician is thinking about re-election. Officers may also wish to demonstrate a degree of public support for the benefits the project is going to deliver, or to show that there has been significant public engagement in developing the idea: these, it is thought by some, make a proposal harder for a politician to resist. Politicians may also look more favourably on officers with good track records in delivery, or on ideas that have proven themselves elsewhere, especially if they are risk-averse and wish to avoid criticisms over their judgment. They may also prefer proposals that give them arguments they can deploy in debate with their counterparts; for instance, about the resource commitments (not just money, though this is always prominent) that are implied in a proposition, and the capacity of the officer team to deliver.

But, after all this, there is still a residual view in some quarters that a good, strong project should be capable of winning support without any manipulation or positioning being needed.

'One of our councillors might think, that's really important, but his colleague thinks, why? The Councillors make the decision together and that's why you need more arguments.'

Kapelle

'We don't necessarily go into it in any detail. They like these documents concise and to the point.'

Essex

'The stronger the project, the easier it is to convince the other [Coalition] partners. So it has to be really strong, a good project, [where] everybody can think that.'

Antwerp (decision-maker)

'All the proposals that were accepted were based on arguments of health, safety, sports, recreation. If I made a proposal based only on biodiversity, that's lost. That doesn't work.'

Bruges

6.2 Evidence of cost

Two kinds of cost are discussed here: capital costs, the one-off outlays necessary to deliver a project, and revenue costs, the ongoing, year by year costs of maintaining the project after it is delivered, and carrying out any necessary repairs. Respondents' authorities tend to separate these into distinct budgets, and may manage them in different ways.

Almost all project approvals depend at least partly on financial evidence, but the interviews reveal a huge variation in the nature of that evidence. The approach in the UK differs strongly from that generally seen in the other city partners, with a much greater emphasis on cost considerations generally, a stronger emphasis on revenue alongside capital costs, and a greater significance for cost-benefit analysis and/or a financial return. One UK decision-maker says they would look for evidence of viability, evidence of cost-effectiveness, and evidence of funding.

Capital costs are almost always needed as project justification, but responses suggest that inclusion of revenue costs such as maintenance is patchier, especially in the Belgium and the Netherlands. In these municipalities, maintenance may be transferred to those who manage the site, with or without prior agreement, or may be included in the project costing for a specified time period, with the expectation that it will then be transferable to the department that looks after green space. It may even be deliberately overlooked, and will only come into play if a decision-maker notices it. This implies that capital costs are more instrumental in securing approval in Belgium or the Netherlands, and that maintenance costs are a more negotiable concept. This is certainly not the case in the UK, where respondents indicate that maintenance is more rigorously scrutinised; in larger developments, developers can be required to contribute a sum to pay for maintenance. In France, maintenance can be a major element in the financial package, not least because it is unpredictable and difficult to amortise.

But cost, while important, may not be the only consideration, or even the major consideration, in getting project approval. One respondent suggests that the child safety gains being secured in the Zuidrand project have significantly outweighed the cost considerations when put to municipal decision-makers, and there is a view elsewhere that monetary value is not the only yardstick that should be utilised in assessing a project. Planners will often relegate cost to a secondary issue, putting the planning requirements first. Similarly, evidence of public support through consultation or engagement can be more convincing than cost alone.

> *'The only financial evidence needed is evidence of funding in place, there is no need to demonstrate economic gain or other economic evidence.'*
>
> *Lille*

> *'Sometimes you don't want to [raise the issue] ... we have a saying, don't wake sleeping dogs. If the dog wakes up, we'll deal with it, but otherwise...'*
>
> *Anonymised*

Respondents note the importance of co-financing as a dimension of GI projects that sometimes requires the project to be re-focussed for eligibility – the 'dressing-up' issue again. They say that credible costings are normally necessary where co-financing is being sought, and confirmation of co-financing will also be a prerequisite to approval; the co-financer will also look to see that the project fits within their own priorities and eligibility criteria. Again, though, the cost data used to evidence co-financing is generally limited to the cash outlays, with most municipalities, and most co-financers, neither using nor seeking monetised ecosystem services.

The relative value of GI can also be deployed as an argument. One respondent describes using GI as a more creative, multiple-benefit solution to a flooding problem where a more traditional solution was initially evaluated and found to have a very long payback period. The Gi solution delivered the same long-term benefit, but along the way also produced a number of other desirable environmental outcomes. Another respondent has used demonstrator projects to highlight the benefits of a GI approach, again as a basis for comparison with more traditional methods. Nevertheless, from what respondents say about their projects, decisions between green and grey alternatives seem mostly to be resolved by reference to cost, meaning that evidence has to be convincing in this area as well as in added value; it is also clear from responses that there is very limited familiarity with methodologies to prove the value of green as opposed to grey.

Similarly, most respondents discussing ecosystem services find these difficult to quantify in financial terms; even when claimed, the financial gains may not be quantified. Respondents say that data to inform this kind of calculation is too difficult to find, and would not be believed; and that specialist help may be needed to provide the data and to interpret the results. Even where there is a sound argument for cost savings, for instance in a flood alleviation project, the financial benefit (even if claimed) may be left unspecified, because it is too difficult to quantify convincingly, is disproportionately demanding in terms of time and effort, makes too many assumptions, and generates results that lack credibility.

In Essex, this had led the authority and its flood partner, the Environment Agency, to agree a rule of thumb calculation which allocates a notional saving for each property protected by a flood scheme, and uses this to allocate external funding to the authority's flood schemes. It may have some basis in fact, but this is untested, and it works only because both parties accept it. The Hague also uses a rule of thumb calculation to assess the costs of providing public space, based on its area, and including an allowance for maintenance.

Cost-benefit analysis is essentially a preserve of the UK authorities; it comes up elsewhere, but without the same detail or consistency. In Cambridge, it is part of a standardised template to be completed as part of the business case for a project, and there is an expectation that a project will be able to demonstrate a level of return on the investment being sought, in the form of savings on future revenue spending. External consultants may be brought in to assemble the analysis, adding credibility in the process and reflecting the need for officers to be fireproof when costs come under scrutiny. There is evidence from the interviews that suggests that, while officers may be convinced, decision-makers may be more sceptical, especially if they are not disposed politically to favour green approaches. Nevertheless, GI projects have been approved with an unquantified expectation of savings based largely on common sense rather than monetary measurement. Those respondents engaging in cost-benefit analysis will look at the payback period, the length of time it will take for the savings or revenue to offset the initial start-up costs, and compare this to the expected life of the project, to ensure that it can pay for itself before it needs to be renewed. There is a strong inference that this analysis would be greatly assisted by being able to quantify ecosystem service gains in financially equivalent terms.

Finance, and financial pressures, can stimulate financial creativity. One UK authority (Cambridge) looks for ways to turn revenue costs into capital, by agreeing a figure with developers to represent their ongoing maintenance obligation and using that to create a sinking fund which can then generate interest, which may in favourable circumstances be enough to finance maintenance without raiding the capital. Southend turns capital costs into revenue by borrowing the capital sum and setting up a programme of repayments over a number of years; this can be very effective at times when interest rates are low. Decision-makers may be cautious about these less conventional approaches, until they prove themselves and become a more normal way of doing things; the advocates of these approaches also indicate a need to exercise caution and manage expectations, to maintain credibility.

Southend has taken financial evidence to a different level, albeit in a different field of work – namely energy-related projects. In this field, the authority confidently sets financial values for ecosystem services, and builds these into its cost-benefit analysis (with a degree of precision that probably demands specialist accounting knowledge), and its decision-makers find these calculations credible and rely on them when assessing project values and returns on investment. Even where returns are needed from the outset, savings can be identified and monetised convincingly, and significant investments are made based on these justifications. Southend respondents suggest that its experience in energy-related work might be replicated in GI, and hope for NSCiti2s to provide the model that can achieve this.

Elsewhere, though, there are examples where this extra financial justification is neither needed nor attempted; the ecosystem services may be identified, but are not monetised at all. It is even identified as a cultural difference between the UK and its European counterparts.

> *'We don't go so far [as to measure the cost benefits of ecosystem services], because the method does not exist... here, it exists in universities and they have ways to calculate it. It's not accepted [by our decision-makers].'*
>
> *Bruges*

> *'To monetise health benefits is really hard... if we could say, I can save you X over 30 years by [reducing] depression or people being more active... to quantify that in a way that the capital programme [would accept] is very difficult.'*
>
> *Essex*

> *'This is where I like to get to: ... you give me £1 million, I will give you back your million, pay all your interest, pay all your fees, and give you more money [back] every single year,... and then I'll give you all this social benefit. Now try and say no.'*
>
> *Anonymised*

> *'This is not the French culture... the French approach. People in the UK are more fond of this kind of approach than French people.'*
>
> *Lille*

6.3 Data, measurement, and monitoring

Very few projects would be approved now simply on their own merits; almost all respondents say they have to state in their business case what impact the project is expected to achieve. But there is variation in the nature of those statements, and in the quality of the evidence used to forecast and measure the claimed impact. In some cases, a simple statement of likely impact appears to be sufficient, without any supporting data and without further or wider development, and one respondent sees advantages in keeping these statements as vague as possible. But the survey suggests that this is changing, with decision-makers moving towards expecting more. From what respondents say about their approval processes, an active travel project (for example) may now need to do more than simply provide a cycle path; to compete effectively for funding, it may also need to make claims around reducing accidents, protecting children, reducing obesity, reducing traffic congestion and so on – in other words, to develop the original idea and remind decision-makers of the range of potential impacts a simple GI project might have. These benefits are not necessarily quantifiable, and may be obvious to the business case author, but can be readily explained, are credible spin-offs, and seem to be influential for many decision-makers.

EU projects always require measurement, but are not alone in this expectation. Respondents also report pressures from national and regional governments, as in France where planning regulation is demanding more in terms of performance measurement, or in the UK where net biodiversity gain has to be measurable.

So, many respondents know they have to provide more robust forecasts of impact, and may even need to measure and report back later. Data may thus be an essential element of the argument, and respondents are using sources such as their authorities' GIS and demographic mapping to make claims about the potential numbers of beneficiaries, or potential users, of a new GI proposal. The results may

overstate the case, and are easily challenged, but are the best (or only) data readily available. Not every authority has a sufficiently comprehensive GIS database to provide more sophisticated impact data, however, nor does every GI proponent have the skills to utilise local data; one simply uses the internet to source numerical arguments in support of project ideas. Some use is made of existing scientific data collection such as air quality monitoring, water testing, temperature monitoring or traffic counts, either as a justification for a project addressing a particular problem or to pinpoint a location where a project can have most impact, but there seems to be potential for more use of this evidence.

There can also be doubts over whether the measurement data available is actually measuring the right thing or providing the correct angle. Performance management is not always as precise or focused as it might be, so counting trees may not reflect tree quality, maturity, or value, for example. Respondents provide examples where a more directly obvious performance measure is not being attempted, but data that is available on a secondary issue is, so a footpath constructed essentially as a road safety measure may not be able to quantify the potential safety impact, but can utilise air quality measurement as an indirect indicator of the need for the project, by demonstrating traffic congestion and health risks.

Many of those who do not currently count, or measure, recognise the value of being able to do this, and hope that techniques and tools might become available to help with this. But these municipalities are mainly looking for simple impact measurement, rather than complex analyses, or monetisation tools.

'I would translate [the statements] into what are the effects for people who live here... more about the effects... What's the benefit? Why do we want this? For who is this positive and for who is it negative?'

Kapelle

'How can you measure road safety, it is very difficult... it is much more easy to monitor the air quality.'

Antwerp

'You would get pushback if you just put those in [the business case] ... without any justification or reasoned argument behind it... you have to make some analysis that is evidence based.'

Cambridge

'I want to stop the ... counting of stems, we should be looking at the impact and the potential... leaf coverage is much more relevant, or perhaps even leaf volume... a different kind of modelling... I would very much like to talk performance.'

Anonymised

Given the attention given by respondents' municipalities to evidential claims concerning benefits of GI, it is surprising to note that *post hoc* monitoring is somewhat patchy, to say the least. One exception is the developer-led project, where those setting planning conditions may look to monitor compliance and take enforcement action where it is deemed necessary. In some instances, respondents say that their municipalities rely on resident feedback to let them know how things are progressing and how well promises are being adhered to. In many projects, though, there is a clear implication that, unless there is a catastrophic failure that demands accountability, the municipality simply moves on to its next decision and will not revisit earlier ones. Monitoring with any level of precision requires a baseline to be set, and then the same methodology to be applied to measure change; both can be an added, and unwanted, cost and research burden.

Difficulties in measurement apply just as much to monitoring as they do to the initial business case. Species counts, for instance, are often very difficult and costly to carry out, and even where reporting back takes place, it may well be informal and general rather than scientifically accurate. This may create difficulties in proving the net gain called for by UK planning legislation, but seems to satisfy the expectations of authorities elsewhere. Developer assurances about air quality improvement or carbon capture might be capable of monitoring, but demand staff and financial resources that are not easily prioritised. One instance was reported where a biodiversity target was ignored because a traffic target was deemed more important, an example of conflicting priorities in this aspect of GI as well as elsewhere.

But where baseline data is relatively easy to obtain, monitoring can also be done, and increases confidence in the approach being taken. Lille, for instance, monitors ambient temperature specifically in its more vulnerable neighbourhoods, and uses this data to assess the impact of its GI installations there; its GI proposals include action plans that are also monitored and reported on. Middelburg similarly uses heat island mapping to focus, and to monitor, its work in alleviation. But while The Hague has a programme of air quality monitoring, this is not specifically linked to GI installations and cannot therefore be used to prove that GI itself brought about any change that might be detected; too many other variables are in play.

Interestingly, only one respondent mentioned financial monitoring, checking that the money was actually spent in the ways required by the approval.

> *'We have two people who do nothing else other than go and check on all the developments and renovation of housing.'*
>
> *Antwerp*

> *'That's a challenge in itself. There is never funding available to do the monitoring... in an ideal world, yes, in reality, no.'*
>
> *Cambridge*

6.4 Public consultation and communication

Public consultation emerges from the interviews as an essential component of the evidence in some municipalities, and as desirable in others. The consultation often takes place fairly early in the process, so that the results, and the confirmatory evidence from the consultation, can appear in the proposal, where (if positive) it can act as reassurance to a decision-maker. But at least one authority will not consult the public until they have firm proposals agreed internally, so as to manage public expectations; on the other hand, another would put consultation at the very beginning, with a *tabula rasa*.

There are of course risks in public consultation: the public may not like the proposal, or they may ask for amendments that diminish it in some way. To help address this, several respondents' municipalities will hold a public information session, where the plans can be discussed, questions answered and additional, less obvious benefits (such as ecosystem services) explained. Generally, the consultation will explain what is intended, how it will be achieved, and how adverse impact (if any) will be minimised or mitigated; but there are some consultations that start with a blank sheet of paper and which seek ideas and suggestions. Other techniques include participative research and surveys, and some municipalities have run demonstration projects. An area of difficulty, though, is the involvement of voluntary groups such as wildlife groups or environmental activists; they may have to invite themselves, and procedures for involving them seem less secure.

Levels of participation are variable, naturally, and although project sponsors may be happy to see anyone turn up, respondents accept that decision-maker confidence may be proportionate to the volume of response. However, attendance may also be driven by opposition, in which case those who attend are more likely to oppose, or be concerned, about the idea; the public event provides an opportunity to reassure, to change minds, or to adapt the project. At least one respondent would interpret a low attendance as evidence of negligible opposition to an idea. Other respondents, though, are aware that opponents may have other platforms, such as social media, where they can rally support.

'People are sometimes afraid... what is going to happen to the space when it gets dark... will we get more burglars, will they do drugs... security, that's sometimes an obstacle... for the general public.'

Antwerp

'Most of the time, [the attendees] all hate it. The people who come... it's always because they have something to say against the project. I can deal with that.'

Bruges

'[The] Alderman will ask, how much participation of the city, the community... success depends on the support of local people... [otherwise] forget it.'

Anonymised

'The local people are now stakeholders; they want to participate more in the whole process of decision-making... it takes a lot of time and a lot of energy... and you cannot fulfil all the wishes.'

Kapelle

6.5 Linking to strategic commitments

An important dimension in a project proposal may be making a connection between the project being put forward and the wider strategic commitments that the local authority has made; this shows that the project not only promises its direct GI objectives, and its added value in other areas, but also contributes to the greater, longer-term plan of the authority and shows that this also is being taken forward. The research reveals a variety of different strategic possibilities, some of which are already in existence and some which are emerging. They include wide-ranging and longer-term strategic ambitions, and more focussed, or time-limited commitments, and some are more practical while others are more aspirational, but they all have in common the idea that an individual project can contribute more widely than its own immediate objectives.

Respondents confirm that some NSCiti2s municipalities have declared climate emergencies, or climate change adaptation strategies, or made zero carbon commitments, some with quite challenging targets. They also suggest, though, that some of these higher-level ambitions are not yet influencing policies in these authorities in the way they might, either because the authority is reluctant to embark on potentially controversial initiatives (particularly those involving car use), because single-policy solutions such as tree planting are viewed as sufficient to meet the aspiration, or because meaningful local change demands co-operation with municipal neighbours. Respondents are encouraged, however, by public opinion and experience driving the agenda forward and asking hard questions of their municipalities. They see GI projects as a response to these issues and concerns, as well as addressing higher-level aspirations whose delivery may still be a matter of uncertainty in the authority.

> *'There are great policies; the Council will declare a climate emergency quite happily... at the same time, they introduce policies that increase car use.'*
>
> *Anonymised*

> *'Climate change is not something you just address at the local level. You need a bigger plan...it's something we have to deal with together [with other municipalities].'*
>
> *Kapelle*

Respondents in other authorities identify shorter-term strategies, such as those linked to the political cycle, or broader policy agendas such as overall corporate plans with more general commitments. In these, it may be a requirement for approval that a project fits in to these agendas, or it may simply be helpful for a proposal to demonstrate that it works toward these objectives. There is also at least one authority that tries to go beyond the policy plan and add additional outcomes that attract external funding and achieve more.

> *'The biggest criterion we look for is if it matches our policy agreement we made for the next six years. That's a red thread throughout every [decision].'*
>
> *Anonymised (Decision-maker)*

> *'I work with the policy plan of the city as a whole... I try to combine [it] with... additional funding... to make things more innovative, to go further than business as usual.'*
>
> *Bruges*

Only a small number of respondents identified a specifically green agenda within their authority. One of these, in Lille, is fundamental to the authority's GI approach, and sets out the idea of a mosaic of small-scale community-based initiatives that will add up to more than the sum of its parts. Although each project has to bid for funding, the bid can reference the project's rôle in terms of the wider network of GI being developed here. A second municipality has a 'green agenda' developed at officer level and based around the contribution green initiatives can make to quality of life, recognising that this concept provides a stronger hook to hang green initiatives on, but this does not seem to be widely owned or referenced within the authority at this point. And a third green policy agenda is still at the formative stage, yet to receive more than approval in principle and with no budget or co-ordinated delivery plan yet agreed, but with possibilities in sight. Tentative as these documents may be, GI projects can clearly be aligned to these plans and can help towards achieving their targets.

Other authorities have lower-level strategic plans linked to aspects of GI, without necessarily widening these to include other aspects of GI, or bringing these together as a more general green strategy. Thus, there may be biodiversity strategies, or open space strategies, or tree strategies, or energy strategies, or local district strategies, all of which can be supported by GI projects, but responses suggest that these often co-exist without reference to one another or co-ordination within an overall strategic plan for GI. As one of the principles of GI is the achievement of multiple gains, there may be a lot to be gained from co-ordination of these more focussed policies, although in the meantime GI projects can be positioned as impacting positively on several sub-topical strategies. Respondents may also use other departmental or organisational strategies as justification for a GI project, as with partner agencies such as water or environment bodies, as a means of securing funding from their budgets.

Some respondents work in authorities that have no strategy within which they can place a GI proposition. The policy thread that is helpful in other municipalities is missing, as are the firm objectives that a GI proposal can contribute to meeting. This is changing, though, with three NSCiti2s partners identifying work being done to try and embed an over-arching policy within which they can position GI proposals. Local planning documents are not seen by respondents as sufficient to address these policy shortfalls, because they focus excessively on the built environment and too little on green elements, because their priorities are set in terms of housing or economic priorities rather than environmental ones, because green conditions have proven excessively soft and negotiable, and because they tend to be site-specific rather than exploring the bigger, more strategic picture. This does not completely stymie GI, however, and there are examples of opportunism, for instance to build GI into other projects such as a new main road, or into housing projects, utilising priorities such as noise buffering, sustainable drainage, or energy reduction as the case for GI with wider ramifications.

'I especially enjoy the subject about green and nature and biodiversity, although I notice that there are so many other priorities like warmth in the housing, sustainable energy... we have to make some policy for it.'

Anonymised

'We have the very big project, which is the Green and Blue Network... we work with the neighbourhoods to [address] amenity or quality of life...we put it together... [as part of our] strategical plan and we [look for] financial possibilities.'

Lille

'[We need] a kind of umbrella document on urban green infrastructure, but [at the moment] there are too many sub-topics... in some districts we have more integrated plans, but not for the whole city.'

Anonymised

'The local plans, they are good documents, but they are development focussed, rather than bigger picture... this [new] shared plan,... biodiversity is mentioned in the second line... who'd have thought it – back in the day, it was like Appendix J.'

Cambridge

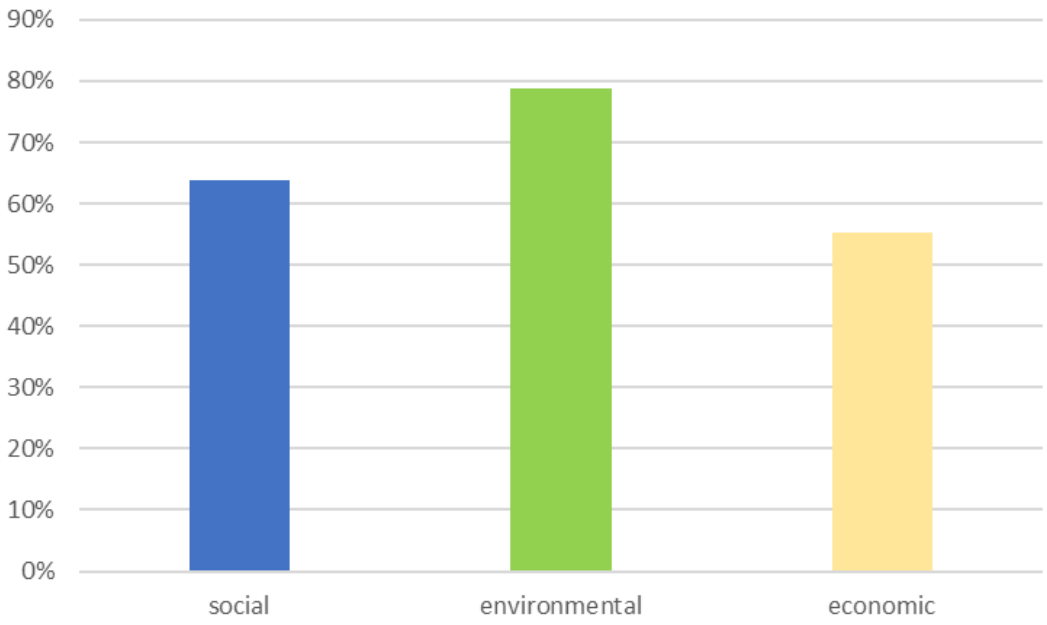
6.6 The most convincing evidence

Respondents were invited to select, from a range of possible types of evidence, the ones that they thought would be most likely to convince. The choices offered were these:

- Evidence of direct environmental benefit to humans (*e.g. improved health, reducing noise and pollution*)
- Evidence of indirect environmental benefit to humans (*e.g. urban cooling, carbon capture*)
- Evidence of a more general environmental benefit (*e.g. improved biodiversity, habitat protection*)
- Evidence of direct social benefit to humans (*e.g. more space for recreation, safer walking and cycling*)
- Evidence of indirect social benefit to humans (*e.g. strengthening communities, linking communities*)
- Evidence of direct economic benefit to the community (*e.g. reducing costs of dealing with extreme weather*)
- Evidence of indirect economic benefit to the community (*e.g. increasing land values and property prices, more attractive places to live*)
- Evidence of more general economic benefit (*e.g. attracting external funding, new income streams for the Council*)

There are thus two dimensions to the response: the focus of the evidence itself, and whether they felt their decision-makers preferred direct, indirect or more general benefits. Respondents could choose as many responses as they wished, and the 47 who answered this question made 119 selections in all. Fig. 6.1 shows the distribution of responses across the three broad areas of potential benefit:

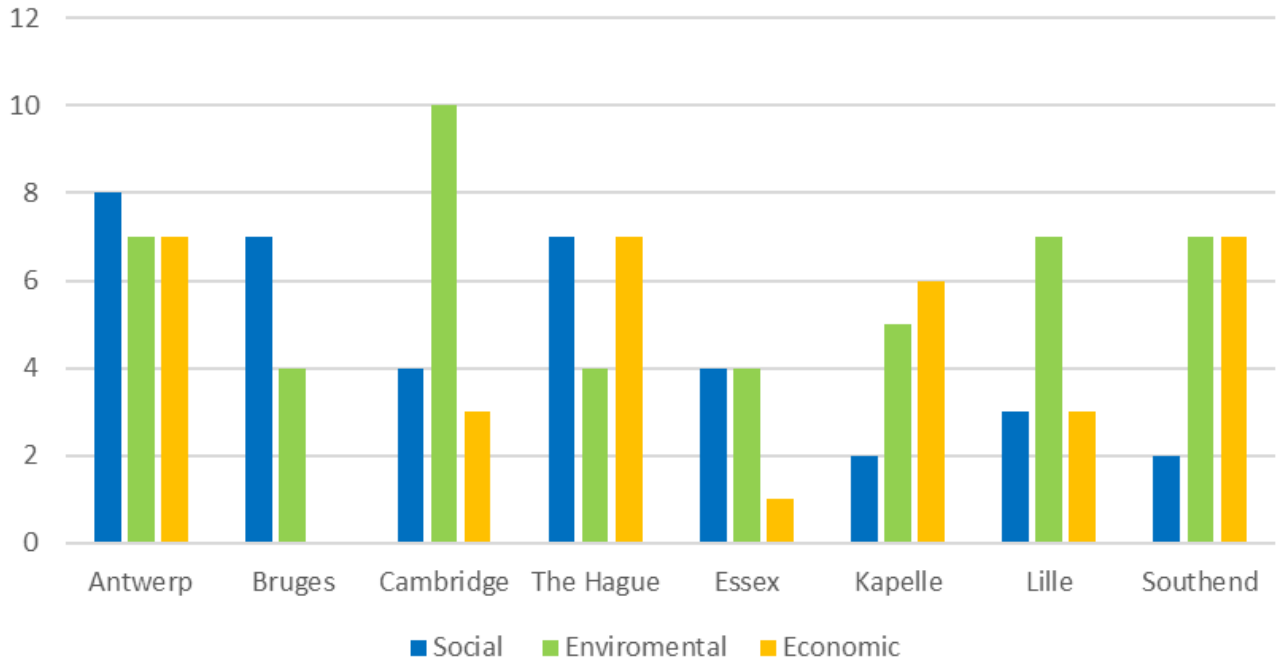
Figure 6.1 Areas of benefit thought most likely to be favoured
(% is of all respondents answering: N=47)



Although the most common responses lay in the environmental area, all three sectors attract a strong response. Over three-quarters of responses would include at least one piece of evidence from the environmental group, while nearly two thirds would include social issues in their evidence, and just over half would expect their decision-makers to respond to an economic argument. It is also clear that many respondents would include evidence from more than one of the three categories, and in fact three-quarters of respondents selected from two or more categories.

Unsurprisingly, this varied a lot by city (Fig. 6.2)

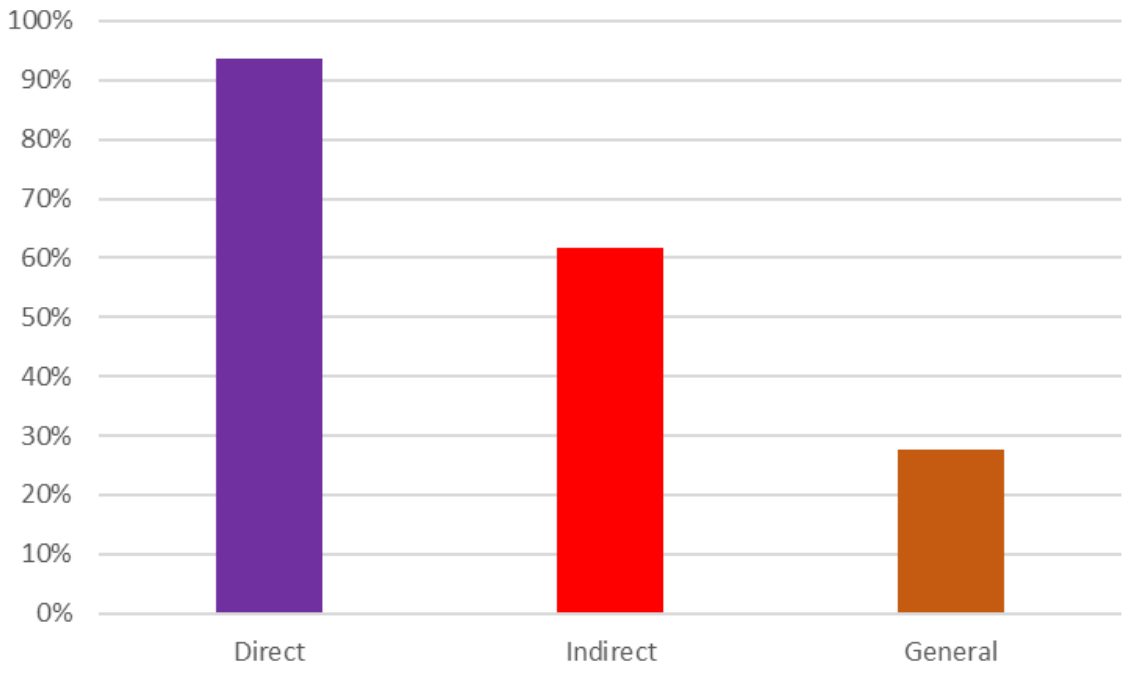
Figure 6.2 Areas of benefit thought most likely to be favoured
(Numbers of responses: N=119)



The numbers at city level are small and should be treated with some circumspection, but there are clear differences in the response combinations of different municipalities. Antwerp shows the most even spread of responses across all three categories, but represents not just one municipality but several, each with their own set of decision-makers. Bruges is the only city whose respondents rule out any category completely (economic in this case). Cambridge and Lille focus strongly on environmental evidence, as does Southend where economic evidence is also seen as more important. In The Hague, social and economic evidence are prominent, and in Kapelle economic and environmental evidence are seen as more influential.

Fig. 6.3 shows the distribution between evidence of direct impact and indirect impact:

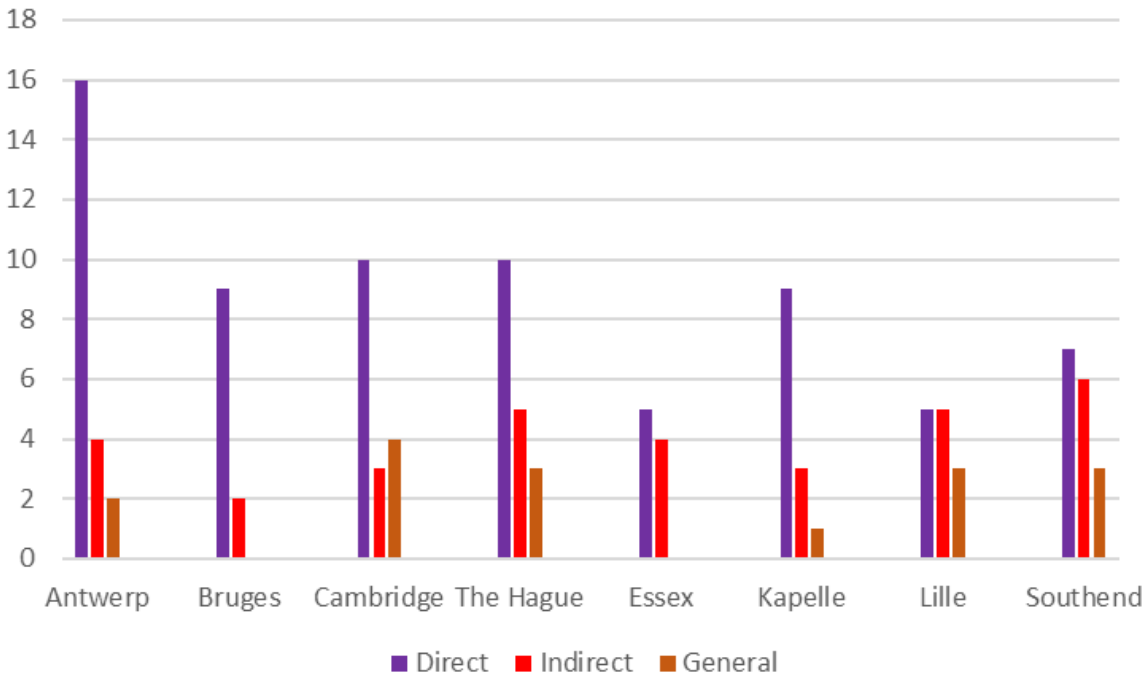
Figure 6.3 Types of impact thought most likely to be favoured
(% of all respondents: N=47)



Almost all respondents chose at least one form of direct evidence. Three in five respondents selected an indirect option, and a quarter included a more general piece of evidence. Clearly, the direct evidence is the form seen as most likely to influence the decision-makers.

The city-by-city split is shown in Fig. 6.4:

Figure 6.4 Areas of benefit thought most likely to be favoured
(Numbers of responses: N=119)



In Antwerp, Bruges, Cambridge, The Hague and Kapelle the emphasis is overwhelmingly on direct benefit. In Southend and Lille, there is a more even split between the different types of benefit. General benefit is not at all in play in Essex or Bruges, and is weak in Kapelle and Antwerp. These results confirm the importance of evidence of direct benefit in making the case for GI. Putting the two sets of data together, the evidence most likely to have an impact overall is direct environmental, but the variations at city level mean that the overall result does not necessarily provide local guidance.

There is a rationale behind these choices, even though some respondents were reluctant to exclude any potential piece of evidence from their case. They suggest that social benefits are generally visible, and allow decision-makers to own improvements in individual and community quality of life. They address the things that cause residents everyday aggravation, such as traffic congestion or lack of recreational space; they also respond to issues raised in public consultation. Environmental benefits may be visible, but may also be recognisable in personal comfort as climate problems and public health are addressed, while it is the environmental gains for humans that emerge far more strongly than the gains for other creatures, helping to make the human environment attractive and pleasant. And economic arguments will be more important in those councils where decision-making focusses most strongly on cost and cost-benefit, on new income streams to relieve budgetary pressures, and on achieving savings.

'The [other] aldermen have different priorities. For me, the most convincing reasons are the economic [ones], but that doesn't say that I'm not open to the environmental [arguments] as well.'

Anonymised (decision-maker)

'If the area is nice, people can play there, people will want to live there, people can work there... and they will come [here] because there are those opportunities...'

Antwerp

Several respondents suggested that their decision-makers would be more receptive to arguments of direct benefit because the link between the project and the gain was clearer, because the impact would be more visible, and because the benefit would be likely to arrive more quickly, perhaps within the political cycle. Direct benefits would also be more understandable and recognisable among the general public, whereas the other benefits might need to be explained, and might be less convincing. For decision-makers who are sensitive to public opinion, the more obvious the benefit the better. Direct benefits would also be more likely to present ribbon-cutting opportunities, allowing the decision-maker to associate themselves with the benefit in question.

These findings imply difficulties when projects are being designed to address longer term strategic priorities such as climate change. These strategic aims need to be addressed to ensure progress (and that can be a point to make) but if short-term gains can also be built in, for instance through phasing, or through utilising opportunities that arise as the project progresses, then a project can ride both the long-term and short-term horses simultaneously.

'It'd be quite naïve of us not to realise that they're going into an election next year... they're looking for high profile, easy wins.'

Anonymised

'Without making it explicit, you can combine these [long term and short-term] things.'

Antwerp

'I might have a 20-year project... I need to think about photo moments, and it might be on installation, it might be on the break-even point, it might be on the anniversary or whatever.'

The Hague

Obviously, many projects, and perhaps most GI projects, have benefits that cross over these somewhat artificial boundaries. The results here strengthen the argument already made in Chapter 3 about emphasising the attributes of a project that are most likely to find a receptive decision-maker audience: essentially, dressing the project up in clothes that will appeal to the person scrutinising it. If there is more than one segment of that audience, such as in a coalition where cross-party support is needed, or a Mayor whose priorities are focussed in a different area, it should be possible to dress the project up in multiple guises and to present the gains that are most likely to win people over. The other gains may or may not be mentioned – most likely they will, unless they trespass onto someone else's territory - but if the project succeeds, they too will be realised. This in turn suggests that some effort put into thinking about how a project might achieve more than just its obvious benefit may open up new opportunities for support.

'They can walk from there to there, they can enjoy the landscape, it's very nice, and oh by the way, there's a butterfly there too. They get what they want, I get what I want, I help the butterfly.'

Anonymised

'The things we are doing on the public realm, we cannot say these are climate actions, because that is a different alderman; we have to sell these things as innovative actions in the public realm.'

Anonymised

'That's my strategy. With one action, many purposes.'

The Hague

'We did a SuDS scheme in [a] hospital...it was all about reducing water going into the system. [But] from the hospital's perspective, it was about creating a green space in the middle of a very highly-stressed clientele and staff... everyone wanted to fund it [for different reasons] ... multiple benefits are great.'

Essex

Photo: Lotte Meijleman

7 Getting the go-ahead

Having secured the funding, and assembled the evidence, this section explores how respondents describe the elements of the typical process through which a project goes to arrive at approval.

7.1 The Approval Process itself

The process elements have different names in different jurisdictions, as do the parties involved. Even within the same municipality the process, and the level at which approval is decided, may be dependent on the scale of the project, the financial commitment needed, or the expected public reaction. But a closer look at the processes described by various respondents, with different nomenclature and decision-making powers in different hands, shows that they nevertheless resolve into a fairly standard process, with additional elements introduced by local regulations or the nature of the project.

The essence of the process described by respondents is shown in Fig. 7.1 (the diagram shown here is developed further later in this chapter), and is articulated in detail below.

Figure 7.1 Essential elements of GI project process

The **project idea** can emerge from almost anywhere. It may be that a councillor has seen a possibility, wants to respond to a known problem, or has raised an issue with officers that crystallises into an idea for a GI project. Equally, an officer may come up with an idea they think may be worth pursuing further. Both officers and politicians pick up ideas through networking and meetings with partner bodies, or may be inspired by what they see elsewhere (though this is not often recognised as a source). Officers sometimes have ideas roughed out and tucked away in a drawer, in preparation for those moments when a councillor asks for suggestions as to how some spare budget might be used, or an opportunity arises to participate in an externally funded programme. Some project ideas have already been included in an approved-in-principle strategy, from which they will emerge when the time, or the finance, are right. Officers responsible for design, or for GI, may be invited by colleagues to contribute their thoughts to a larger project, or to suggest green alternatives to traditionally based proposals; or they may insist on contributing to those proposals. The provincial government may have a project they want to invite local municipalities to engage with, requiring a decision on whether or not to participate. Or an authority may want to trial a new approach to an issue, to prove the concept. All these possibilities were mentioned in responses.

Of course, not all ideas make it very far along this linear path. But addressing a known problem is a particularly helpful starting point for a GI initiative, as this will form part of the justification for looking further into the possibility.

'When there is a problem, they want a plan to solve it, and that helps.'

Kapelle

'My ideas come from networking, partner meetings... and my Alderman is bringing her ideas, and I think they also have their own networks... where they exchange ideas.'

Bruges

'Sometimes politicians come to you and they say they have some money, or they want to do something... if you can go to your drawer and pull something out, because if you have to think about something new in the short period of time [allowed]...'

Antwerp

If an idea is seen to have merit, it will normally proceed through some sort of **informal discussion**. This may be within the officer team, with officers in other departments, or with the politician responsible for the area where the idea has originated. Or, in the case of an idea emerging from a higher-level authority, there may be a discussion with the municipalities who might be interested in participating in the idea. Discussions with other departments, or with external partners, may consider the impact and acceptability of the idea for other services, the division of responsibilities such as delivery and maintenance, and/or the sources of funding that might be explored. The discussion may also open up a need for data to evidence either need for the project, or the projected benefit from the project, or both. The discussion may consider practicalities such as site, deliverability, funding and public reaction, and the politician's contribution may also cover the disposition of the decision-makers and the likelihood of approval or otherwise. Getting political support at this stage may be vitally important, as this politician may have to act as champion for the idea as it progresses.

This stage may be fairly speedily resolved, one way or another, but may in some projects be a long, incremental process educating and informing colleagues, or seeking to change minds, about the need and desirability of ecosystem service outputs. It may be the end of the line for a poorly formed idea, one that is potentially controversial, that offers legal or reputational problems, or that is thought unlikely to be approved further along in the process. But it may also be the point at which a **decision** is made to proceed, based on the delegated authority given to the politician responsible for the service area, or an officer with a similar delegation. This is normally limited to those projects with small spending profiles, that are non-controversial, and which can be undertaken within an existing approved budget or policy; but even so, some small-scale projects need higher-level approval because they raise wider issues.

'To create green infrastructures, we can stop at [named senior officer]. But in this context today... [the wider project] is very important to the politicians, and they have to be informed.'

Lille

'There will be delegated authority within budgets for certain schemes, within the parks, [or] on Council-owned land.'

Southend

'Changing minds is not easy, [but] it's important that there are more integrated thoughts between... departments and municipalities.'

Kapelle

An idea that emerges as credible from the informal discussion will be firmed up into a proposal, with some sort of argument made to justify it – a business case. There may be a standardised document to ensure that all the relevant questions are answered, or it may be a free-format proposition. The policy officer who supports the political decision-making body may be able to anticipate and advise at this stage on the level and nature of the evidence the politicians will need.

The idea may also be developed into a design, a drawn-out plan of what the project will look like in its landscape context, while the proposal will have to assemble the evidence that seeks to justify the project, quantify the funding needed to realise it, and explain how the funding package will work. In most projects, it seems that the business case will be developed before the funding is in place, although the funding requirement will be indicated in the business case and will need to be confirmed before submission. However, there are examples in this study of projects being initiated by offered funding, around which a business case has been assembled, including some NSCiti2s projects themselves.

This stage may include the use of specialist expert advisers from outside the authority, such as ecologists or other environmental professionals, civil engineers or other technical experts who can advise on technical aspects of the approach. Consultants with expertise in project finance and accounting may be invited to undertake work such as cost-benefit analysis. It may be necessary to get expert advice on communication and consultation. For the very largest projects, full-service project design consultancies may be needed.

The proposal stage may look for evidence of public support obtained through consultation – in some authorities this is a requirement, and is often seen as desirable elsewhere. There may also be one or more impact assessments, exploring the project from the viewpoint of other corporate council policy statements, such as its impact on equalities or the environment (respondents point out that GI projects can have adverse environmental impacts as well as positive ones). The evidence may also look for support from overarching corporate strategies or national and supra-national commitments such as on climate change or planning gain. In some municipalities, there may be reference to a geographically-based committee that assesses proposals for sites within its jurisdictional boundaries, and if such meetings are held in public, this will also put the proposition into the public domain and may prompt media or social media discussion.

'I'm thinking with [colleagues] what do we need to tell them to enable them to make the decisions, what does the councillors or the alderman need to make a decision.'

Kapelle

'We had to budget to do a [feasibility] study for the Nature Smart Cities project... and a future proof design... the designers are enthusiastic because they want to work with something new and innovative.'

Bruges

The proposal will then go through an **authorisation** stage, where a senior officer or a councillor with relevant service area authority will approve the onward progress of the project, reject it, or send it back for further thought and development. Delegated authority may again be able to approve the project at this point, provided that the criteria governing the delegation have been met. The process at and beyond this point may not necessarily be clear to the originator of the project idea, in that they may not know whether their project has been approved by a responsible decision-maker alone or by a meeting of decision-makers.

A larger, more complex, or more controversial project, however, will certainly have to go through a **formal assessment**. Depending on the jurisdiction, this may take the form of a submission to a board of senior officers, or to a committee of councillors, or indeed both, who will review the proposal and the evidence and make a decision. This will be either to **approve** the project, to reject it, or to refer it on to a further, more senior committee. Only the very largest, or most high-profile, projects will require a decision at the highest level.

Respondents have some doubts about this stage, and the expertise that is applied at this level. Few, if any, decision-makers at this level will be familiar with concepts of ecosystem services, but they think any detailed explanations are likely to be ignored. In many instances, the project will be competing for a limited resource, and will go through an assessment process which may be quite simplistic, such as a traffic-light system, or a points score with a threshold determined by the size of the available pot. The business case has to do a lot of work, but has to be pithy and succinct as well, and it may need to work in a subtle and nuanced way with the assessment criteria being applied.

'The business case goes to [an officer] board, they are conditioned, worldly-wise... they'll watch you to make sure you're not trying to slip something past them. They're the gatekeeper.'

Cambridge

'If it's a small quick-win project that hasn't got any potential for a negative impact, the cost is minimal or we've got the funding source identified, then [the officer board] will... say go ahead, do it.'

Essex

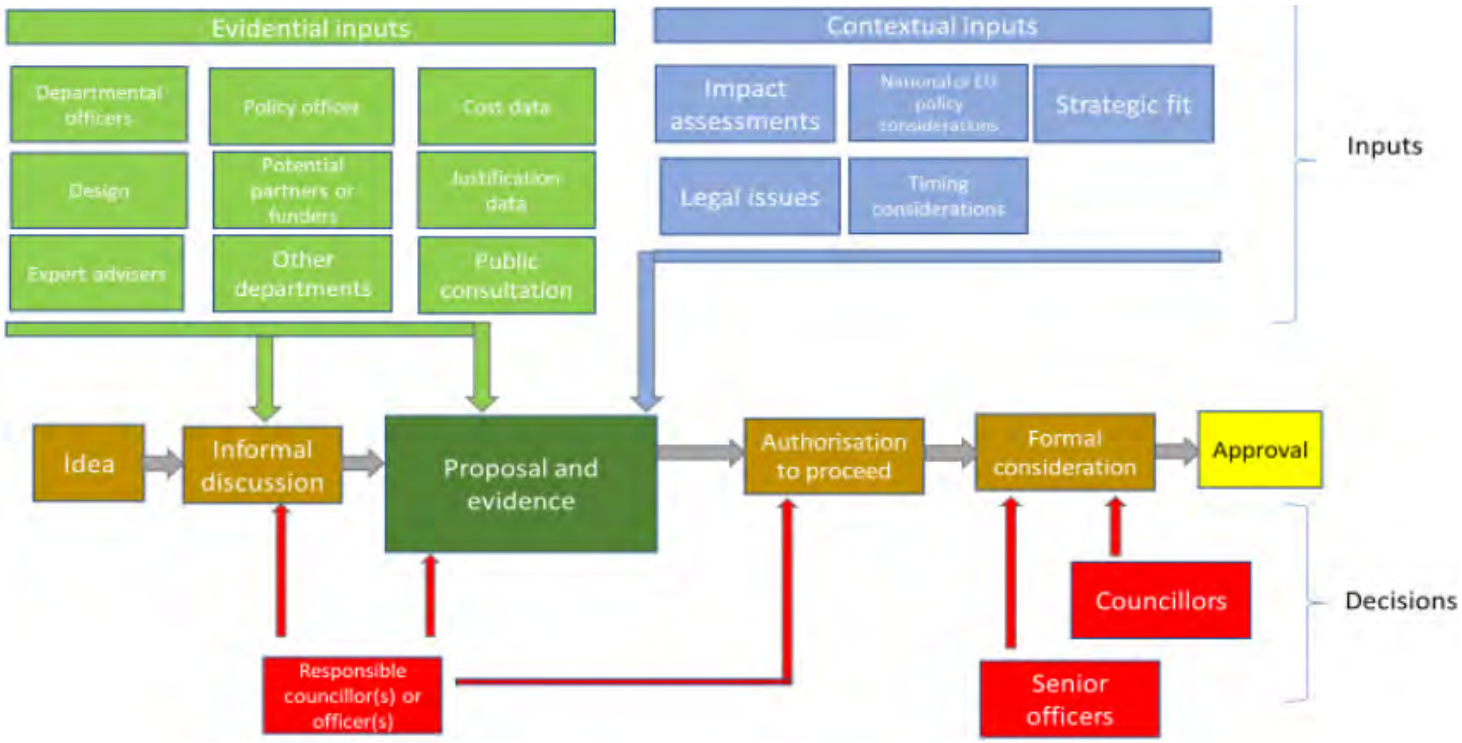
'Who has to approve it? If I said I had no clear answer, would you believe me? Because I really don't.'

Anonymised

Approval of the project at the end of this process may not be the final decision on whether or not it proceeds in its current form. There may be a requirement for a formal land-use planning and/or development control process that will evaluate the project from a new perspective, and which may require modifications or even reject it. This additional process may return the project to the proposal stage for reconsideration or re-design, from which it is likely to have to progress once again through formal approval, this time with the probability of a closer scrutiny from senior officers and councillors.

Bringing this detail into the initial model produces this more elaborated diagram of the approval process (Fig. 7.2):

Figure 7.2 Elaborated process model for GI approvals



In this more developed model, the light green boxes indicate inputs from within the authority or the context from which the idea has been developed, perhaps from a partner, a policy officer, or a funder. These contribute primarily at the informal discussion stage, and may be used to add weight to the proposal and its supporting evidence.

The proposal may also incorporate material provided through external or non-contextual inputs, represented by the blue boxes in the diagram. This is where the material from outside advice, independent assessment and wider policy considerations make their presence felt. These inputs would not normally be sought before the proposal stage.

Data also contributes at the proposal stage. This is where the project evidence needs to come into play, and where the NSCiti2s Business Model will add weight to the evidential argument in support of the project.

The red boxes show the point at which a decision is to be made, and also who is likely to be making it. It can come quite early on in the process, if the project falls within delegation of authority, or after preparation of the business case. More complex projects will need a formal decision in the later stages.

7.2 Timing

Timing affects project approval in two ways. In the first place, this process can be a lengthy one, especially if the project is complex and the more so if it requires, post-approval, to go through a planning process as well. Project proposals may need to wait for the next meeting of the decision-making committee, which might be on a monthly cycle but may well be on a longer interval in some municipalities. Respondents say they have experienced the need to wait for a slot on an agenda, or have been deferred due to another discussion overrunning, or the intervention of urgent business. The decision-making meeting may also decide it needs additional information, sending the project back to an earlier stage in the process, or it may run into opposition that requires political negotiation behind the scenes before approval can be secured.

The second dimension of timing is in the project deliverables. A short-term, quick win project may move faster through the process, and may be approved at an earlier stage, or even under delegated authority. It may also be more attractive politically, in that it will achieve visible results within the political cycle, and allow the politician responsible to associate themselves with the outcome before the next election. This seems to be true even if the politician in question is confident of re-election: a visible result, within the political cycle, is nevertheless highly desirable. Public opinion is also thought to work in a similar way, expecting a quick turnaround on a project. This does not completely rule out longer term projects, but it may help if they can be broken down into phases or stages with visible deliverables along the way.

'The citizens also think about what they have to spend this month... not what they will value in one year, two years, or later.'

Kapelle

'You have to be prepared to wait a long, long time... because one person can make the difference, and it is an extreme art to convince that person to not object.'

Antwerp

'The [aldermen] want ... in the last two years [of the cycle], as many pictures as possible that they are planting trees.'

Anonymised

7.3 Legal issues

The approval process can sometimes be complicated by legal issues. Examples mentioned by respondents include disputes over land access rights and public rights of way, issues with building regulations and planning requirements that might be challenged by developers, and the need for permits and licences for certain types of project. One municipality currently faces a legal process over failing to protect a business adequately from flooding, and others are alert to the possibilities of litigation over unfair or unreasonable development conditions. These issues must be resolved before the proposal is finalised and may require input from specialist colleagues or external support.

7.4 The secret of success

Asked to summarise this discussion by identifying the formula for success in putting forward a GI proposal, respondents come up with a range of answers: some are single-issue responses, others in combination. They can be summarised as:

- A good project, with clear and appropriate benefits that are soundly evidenced
- A multifunctional or multidimensional project that can present itself in different ways and appeal to different priorities and audiences
- Political (or senior officer) support and a champion to argue for the project with other decision-makers
- Evidence of public support, and an absence of controversy, especially when close to an election
- Professional expertise in developing the idea and in design, increasing decision-maker confidence
- Funding in place, especially external
- Inter-departmental co-operation and collaboration
- Assurance of the capacity to deliver against the proposal

But other factors less capable of being confronted by the project sponsor may also feature in practice:

- Patience
- Timing, both to get the project on the agenda, and in relation to the political cycle
- Luck

Interestingly, though, no respondent suggested that alignment with a corporate strategy was part of the formula for success.

'It has to be a really good project... when the benefits are clear, we can persuade the other partners quite easily.'

Antwerp

'To convince the right people – the mayor, the most important officers, and the public.'

Antwerp

'The science behind your argument, you can't just float an idea... there has to be supporting evidence, you have to have some form of strength behind your elbow.'

Cambridge

'Some of it is luck. Some of it is having the right project at the right time.'

Southend

Photo: Shutterstock

8 Tools

Respondents were given a showcard with the names of fourteen different tools that are available across Europe for valuing GI, or GI elements. The tools were selected from a longer list using a paper prepared by the University of Antwerp that identified twelve tools that were comprehensive in coverage of ecosystem services, and which offered value-based output data; this list was supplemented by two tools that were known to be in use in some NSCiti2S partner cities, to produce a list of 14 tools in total.[14]

Around half of all respondents were unfamiliar with all the tools listed, and most of the rest could identify only one or two whose names they recognised. Among those familiar with any of the tools, BREEAM was the most widely acknowledged, followed by iTree Eco. Recognition is not necessarily through use, however, and does not imply familiarity with the tool. There is also evidence from the interviews that knowledge of the tools, or even of their existence and value, may not be spread as widely as it could be, so that tool use has become the preserve of specialists, and may be marginalised as a result.

> *'I wonder if our environment department, or our planners and designers, use tools like this. I don't know.'*
>
> *Anonymised*

8.1 Criteria for assessing tools

Three main factors emerge as the basis for assessing tools: their usability, their comprehensiveness, and confidence in the results. These are considered in turn.

8.1.1 Usability

Responses indicate that usability is a key issue, and imply that an important dimension of usability is producing the input data that the tool needs to do its work. Respondents in some cities are being helped by the development and wider use of GIS capabilities, and by the opening up of mapping and other geospatial data. But setting aside the time to generate local data and validate it remains problematic. Cambridge will rely on volunteer data collectors to support its use of iTreeEco, and Essex needed an internship to do its data gathering. Even if the data is readily accessible, it still takes time to assemble and organise, and this can be a major disincentive to a busy department working to deadlines. It also needs careful quality control: as one respondent points out, the quality of the output depends entirely on the quality of the data input (the respondent used more succinct language). But the effort can be worthwhile in supporting the bidding process for a GI proposal and in providing a baseline against which to monitor change, and perfection is not always needed to generate a picture of what is happening. The impression given is of a need to trade-off between usability and reliability, so that compromises on output reliability may be needed to allow non-specialist use, albeit at a cost to precision.

> *'It's quite easy, but you have to research all the time on it to put good data in.'*
>
> *The Hague*

> *'For biodiversity, you have the Singapore Index... well, you get a headache before you even look at it.'*
>
> *Anonymised*

14 Van Oijstaeijen, Wito, van Passel, S, and Cools, J. (2020): 'Urban Green Infrastructure: A Review on Valuation Toolkits from an Urban Planning Perspective', *J. of Environmental Management* 267 (August 2020), 110603.

8.1.2 Comprehensiveness

Knowledge of the tools among respondents is limited, but so too are the tools themselves. Respondents criticise their inflexibility, for instance in insisting on monetising their results, which is not always the municipality's main objective, but also their tendency to generate large amounts of data which may be superfluous, or which may obscure the view needed. A respondent in Bruges, for instance, wants information about ecosystem service provision and outputs, rather than financial data; but one in Essex wants information about economic benefit ahead of social gain and environmental impacts.

The tools may also be strong in one area but generate little information of value in a related sphere. A Greenkeeper learner sees a need to fine-tune the product to make it more relevant to their locality; another suggests it doesn't cover important aspects of GI such as flooding, or biodiversity. In fact, none of the tools on offer seems to provide a comprehensive analysis, but focus on specific ecosystem services while overlooking other aspects of GI. What emerges from this part of the discussion is an absence of any consistent definition of what respondents want from a tool.

> *'Ideally, we wouldn't need it... people would really understand the benefits [of GI], but... we need to be able to measure and we need to be able to say, you have to make an improvement.'*
>
> *Cambridge*

> *'They tend to concentrate on... environmental gain and not on social gain, or they ignore the economic benefits... there are weaknesses in all of these [tools].'*
>
> *Essex*

8.1.3 Confidence

Respondent confidence in this type of model is increased when the model result has been tested in a legal context, and also when the tool is used consistently across a range of different situations and/or cities. It can then generate comparisons based on the same algorithm, breeding confidence at least in the comparison, even if not in the absolute result, which may be less important than the general picture being painted. The results can thus provide a baseline from which progress can be measured consistently, and around which a qualitative context can be written. A consistent methodology, independently developed, academically supported, peer reviewed and tested, is more difficult to challenge, but a degree of subjectivity in the data selection and in interpretation of the output can both influence the overall accuracy. Again, there is a trade-off between precision and a workable output.

Confidence can also be increased through the authentication of the model by use in other locations. A tool used in New York City has added credibility simply because of the profile of its user. And, whereas a tool like BREEAM benefits from having become something of an industry standard, widely accepted and providing a consistent and comparable methodology, other tools are competing for users and – with the exception of iTreeEco - do not yet have this level of credibility.[15] Being able to compare with other reputable cities is of value, especially perhaps for a smaller city board. For decision-makers, the result is only part of the analysis; the explanation and contextual information is also important, and this includes a credibility appraisal. It may also mean an expert verification of the result before a major investment is based on it.

15 iTree Eco is widely used throughout the world. See https://www.itreetools.org/support/resources-overview/i-tree-reports and related webpages [Accessed 20 June 2020].

Respondent confidence is reduced when the model produces results that seem to overstate the benefits. Even if these results are correct, they stretch credulity to breaking point and it becomes difficult to convince others, especially those disposed to be sceptical anyway, of their veracity. This also has a knock-on effect on other models and increases scepticism. Confidence is also reduced when relatively minor manipulations of the data can generate significant differences in the results; this means that genuine errors in data estimates can skew the results, and even that the tool user may be suspected of misrepresentation.

> *'I knew those figures were useless, because no-one else would believe them, they are so high. Everyone will believe it's overrated, and once that critique is formulated, the argument hasn't got any power any more.'*
>
> *Bruges*

> *'[They] will be relying on me to interpret it all, and then they will have confidence in me doing that... [but] it takes some due diligence to be able to use it... [for a large project], they may want the expert to come in , not just me.'*
>
> *Essex*

> *'I think there would be a lot of scepticism about the tool, like how do you know that this... is right? Like fake news... I think that will be a challenge.'*
>
> *Kapelle*

8.2 Assessments of tools presented

Respondents in local authorities in the UK, The Netherlands and Belgium recognise **BREEAM** as a tool used to ensure development meets stipulated quality requirements, and (in Southend's pilot project at least) to demonstrate a sufficiently high standard of development to make occupancy more appealing, and to justify a higher rental charge. They see it as quite a crude tool, and limited in its scope, but with some value in promoting green standards. It is also seen as having teeth, being both independent and demanding, and nudging development towards a greener outcome. But it is a standard, rather than an evaluative tool.

iTreeEco is used to analyse environmental and other qualities, including value, of individual trees and of tree inventories more generally. Cambridge has used it to quantify the city's tree cover and to provide a baseline for further tree-related work, including its NSCiti2s project, but it is familiar well beyond this, and has been used by respondents in Belgium and the Netherlands, and is being adopted by Essex to support a major tree planting project. The Hague is part of a wider iTree project that is exploring urban air quality and heat stress in 22 cities, and which is already producing useful data to help reduce carbon, as well as bringing authorities and others together to explore data on climate more generally. In The Hague, iTree products supported by academic partners are also being used to generate maps showing areas of challenge for ecosystem services such as health, recreation, and biodiversity.

Other NSCiti2s partners are embarking on iTree assessments. Southend had, at the time of the interview, just completed an assessment and was waiting for the results. Bruges hopes to use it to provide basic data about the city's tree stock, to allow monitoring of tree loss and to identify areas of weaker cover.

It is viewed as relatively easy to use in relation to a single tree, but costly to use for more complex projects and requiring a significant effort in sampling and data collection. Respondents see it as reliable, and authenticated by its large client base. However, one respondent notes that the US version generates higher values for trees than its Dutch counterpart, and others also identify weaknesses they attribute to its US origins.

Comments on the other individual tools recognised by respondents are:

CAVAT: This is used in Cambridge and Southend as a basis for valuing individual trees and for comparing values between individuals. Its usefulness rests in its recognition of the age and quality of the tree, and its capacity to assign a monetary value to that, which is widely accepted as a reasonable basis for valuation, including in legal or insurance disputes.

Greenkeeper: This is being adopted in Cambridge as a tool for a separate, non-NSCiti2s project, to produce a data map using demographics, health service, and other big data to develop a fuller understanding of green space usage and non-usage. The tool is also recognised by two respondents in The Hague, but without detailed knowledge.

Ecoplan: Antwerp has used this to produce maps and datasets for up to 18 ecosystem services, with up to six GIS map layers for each one. It has been used to provide supporting evidence for the Zuidrand slow roads project, although it is not clear that all participating municipalities have taken advantage of it. It requires a level of data and IT/GIS expertise to operate the tool, run the analyses and interpret them for local officers, and is thought to be most effective as a responsive tool for those who already have a project in mind, to provide supporting evidence and locate areas of highest impact; without this focus the data may be too complex to interpret readily.

There are no useful comments on any other tool in the analysis.

8.3 Other tools

A small number of respondents mentioned other tools not listed on the card. One of these is **TEEB**, a tool developed and used in the Netherlands that calculates an economic value for a limited range of ecosystem services. However, the person to whom we were referred as the expert user was not especially complimentary about it, describing it as a 'tool for dummies' but acknowledging that it gives an indicative result within its limitations.

ANGSt has existed in the UK for many years as a basis for setting standards for provision of accessible natural green space. An updated version, ANGSt Plus, is intended as a standards tool for GI more generally, but has yet to be widely adopted.

ObSERVE is a tool used in Kapelle to monitor and highlight issues regarding tree inspection and to prompt remedial action. It is an easy-to-use, simple app that is used to schedule tree work efficiently. It can be demanding in terms of initial set up, but very simple in application on the ground, and Kapelle shares the tool (and its cost) with five other Zeeland authorities.

Energy Performance Certification and similar measurement tools are used in some authorities. Local planners may insist on evidence of energy efficiency in new builds, although (as with BREEAM) this is a standard to be achieved rather than an ESS appraisal.

NERC has published a matrix assessment for GI, which has been tested in Essex.

Arboclimate is a tool developed by ADENE in France to evaluate ecosystem service gains from tree installations. It is in use in Lille, as is Infrastructure Ouverte, which brings together experience and expertise to generate results focussed in biodiversity.

Landscape Led Design is used by planners in Middelburg as part of their design process for new developments.

Some authorities are developing tools for themselves. Lille is working on a tool called Residual Temperatures that will be useful in monitoring extremes of heat and locating the effects geographically. Cambridge is working on a local GI toolkit, which is in its very early stages, and also has a climate impact assessment tool used in evaluating projects as an independent internal assessment. Essex has worked with its universities to develop a GIS-based mapping model for GI, to identify and quantify benefits deriving from GI in a development, but which has also been used to critically evaluate a Green Essex Strategy and identify weaknesses and areas where it could be strengthened.

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9 Project Managers' perspectives

A short series of questions, essentially around the specific city pilot in question, was put to the project manager for each project. These explored some of the wider themes in this report in relation to the NSCiti2s project specifically.

9.1 Participation

Four projects came into NSCiti2s by invitation. One of these was encouraged to take part by another partner, but the other three received a specific invitation to participate from the INTERREG managers at the EU. Nevertheless, projects had to be tailored to meet the overall programme priorities, and this involved some adjustment of local ideas to ensure compliance with INTERREG requirements and deliverability within the NSCiti2s timeframe, which partners seem to have had very little problem in doing. In the case of Kapelle, the rules themselves had to be adjusted to allow a city with a population below the usual threshold to participate.

The invitation alone, however, was not sufficient to bring the city partners on board; several project managers noted that they had also sought to identify projects that aligned with their own city priorities, or 'oven-ready' projects that had been possibilities for some time. NSCiti2s provided the opportunity, then, to deliver against established city goals, or to realise ideas that had not yet been possible. The funding was also an important dimension, enabling ideas with support but lacking finance to be realised, or enabling a project's original scope to be widened, with the original local financial commitment serving as match funding. In one instance, the EU support allowed the attraction of other external funding. Public opinion was also a factor that encouraged the use of the opportunity in at least two partner cities, where the opportunity allowed the city to demonstrate visibly that it was responding to a problem, or to tap into a readiness on the part of decision-makers to repair reputational damage from earlier years.

Project managers say that, of the seven city pilots in NSCiti2s, two would have been delayed without this opportunity and three would not have been delivered on the same scale, with the loss of some of the benefits NSCiti2S allows. The other two would not have gone ahead at all without NSCiti2s.

> *'We were taken in by the prize, the money. Taken in by the chance to deliver an aspiration [that's] always been in our mind.'*
>
> *Cambridge*

> *'The municipalities had a budget they could put in... some... projects were just waiting on the proper budget, so once it was there...'*
>
> *Antwerp*

9.2 Impact

All the project managers see their projects making a difference. Some express this broadly in terms of ecosystem services, others in terms of finance, and some reflect both these dimensions. None of the projects is an end in itself; all are expected to contribute more widely than their mere existence, and project managers identify expectations including making the locality more attractive, providing a platform for a potential economic boost, increasing resilience against heat or flood, reducing carbon, improving air quality, improving liveability, increasing public awareness and engagement, and increasing public contentment. Two cities identify political advantage in demonstrating municipal responsiveness to a known problem.

9.3 Finance

Several project managers say they also want to use the NSCiti2s project to achieve financial savings or increased investment, or to provide a platform for future investment. In connection with this dimension, project managers were asked to identify whether they expected the project to do any of these things:

- Save the Council money in the short term
- Save the Council money in the longer term
- Generate immediate external investment
- Provide a basis for future external investment
- Produce economic benefits for residents or local businesses
- Produce more economic benefit than its overall cost

Most of the projects expect to realise savings in the longer term, but immediate savings seem much less likely; short-term financial results are thus seen as difficult, at least for these GI projects. The areas where savings will eventually be made include reducing future maintenance and public works costs, increased resilience (lowering the costs of damage and clean-up), and reducing pressure on stretched local authority budgets.

Only one project is achieving immediate external investment, which comes as developer money helping to make the project happen. Four project managers hope for future external investment, including exploiting the attractiveness of the GI to develop private sector tourism or visitor service opportunities, which may also lead to economic benefits through job opportunities and increased retail footfall. One sees community development opportunities, with their project offering possibilities in local fruit-harvesting or honey production, for instance.

Four respondents see potential for local economic benefits through their projects, which include higher property values as a result of living in a more attractive, or less vulnerable area, and the related potential for increased rental income or property taxes. One believes their project has the potential to influence investment decisions in public infrastructure across a much wider area than their immediate project locality. One, however, raises a cautionary note here, recalling that GI elsewhere has tended towards gentrification of the locality, and has resulted in social exclusion or the exporting of social issues as properties become too expensive for those who currently occupy them.

Two project managers are certain their project will produce more economic benefit than its cost, and a third is hopeful in this respect. For one project manager, the whole purpose of their project is to demonstrate the cost savings and economic gains to be realised through GI; for another, the project will be deemed to have failed if it does not provide a basis for future external investment.

9.5 Difference

As to measuring the difference the project makes, there is a mixed picture. Some cities developed their project idea around the existence of baseline data, produced either through independent assessment or an existing in-house process, and have a methodology they can use to measure change, or access to future comparable data that will do this for them. Others are working on the issue of measurement, and one is getting academic partner support on this. Some project managers hope that the business model developed through NSCiti2s will help them establish both the original baseline position at which they started and the final outcome metrics too, but only two cities have attempted to calculate a monetary value for the project, or for its anticipated outcomes. There is a general willingness among project managers to share data, although some suspect future reticence on the part of decision-makers if the results are not as positive as they hope for.

'Future external investment... if that's not achieved, that's a failure. Economic benefits for residents..., we should be able to deliver that. Even things like fruit harvesting, sharing...'

Cambridge

'We should get a rise in property values... a willingness to pay more, and people coming in from outside buying those properties, which is external investment.'

Southend

'That's the goal... to show that in the long run green infrastructure wins over grey infrastructure.'

Bruges

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10 Inspiration

As a final question, respondents were asked to recall GI examples they had seen, whether locally or on their travels, that they considered inspirational or exemplary. The responses were, unsurprisingly, many and various, and located throughout the world, including both modern western economies and developing countries. Half of respondents mentioned a project that could be described as something large-scale, such as the greening of a disused railway track, and half mentioned something that might be considered small-scale, such as the greening of a local street.

There is little merit in listing the various projects mentioned (although it must be noted that three people mentioned the New York linear park created from a disused elevated railway, and three mentioned the same local park in The Hague). Of more interest are the reasons respondents gave for choosing these projects. For the larger-scale projects, these included:

- The relief the project provides within a dense urban environment, and its contribution to place-making
- The reclamation of contaminated land or the repurposing of land or structures to more ecologically valuable outcomes
- The ecological gains or other ecosystem services the project achieves
- The contribution of the project to climate change and to resilience
- The inclusion within the project of educational gains
- The popularity of the project with local people, tourists or both
- The value of the project in promoting and enabling modal shift in transportation
- The use of underground services to enable protection or green development on the surface

Some of these factors arise in smaller-scale initiatives as well, but others also emerge:

- The possibility of community ownership, responsibility and management
- Combining purposes (i.e. ecosystem services) into a single, small-scale entity such as an incidental green space
- Achieving energy-efficiency or ecosystem services at individual building or development level
- Prioritising local nature provision ahead of other urban demands such as parking
- The educational value and attractiveness of small, accessible projects
- The use of local natural provision as an emblem of civic pride and character

As to funding for these projects, there was only limited awareness. The big city projects are thought to benefit from the very large resource opportunities available to larger metropolitan authorities, including the possibility of buying in specialist advice, and securing central government, regeneration and EU funding for high-profile results of potentially international significance. The smaller-scale projects are often seen, in contrast, as likely to have been quite low-cost, and capable of utilising community or voluntary engagement alongside municipal finance or other local sources, including developers.

Transferability was an implicit aspect of this question, and many of these projects are seen as (in principle at least) portable to the locality of the respondent. There are examples of ideas that have already been implemented - Barcelona's micro-project approach has been inspirational to Lille, for example - and some that are currently waiting for the right opportunity or timing to take forward. Respondents in two cities (Lille and Antwerp) say their municipalities are currently considering underground parking possibilities, with green on the surface, while a third city (Southend) is weighing up the re-greening of a major retail area now completely given over to concrete. A missed opportunity in Cambridge has led to a new approach to a similar development elsewhere in the city, in response to adverse public reaction.

Respondents think combining solutions could be productive; a project associating GI with public art is thought to have transferability potential, and although a local project to manage woodland and use the by-products for school heating failed, the idea is still thought to be achievable on a smaller scale. One respondent thinks a Paris scheme for medium-term land lease to communities for green micro-projects might have potential for other cities too, tapping into a growing demand for this type of opportunity, and exploiting municipal willingness to delegate responsibility for implementation (and fund-raising) into communities.

However, respondents were not always clear whether an idea that worked somewhere else would get local approval, particularly where vested interests exist with whom an idea might arouse controversy or opposition. In municipalities with high land values, GI may have to compete with other spatial demands. Some respondents point out that transferring green ideas into existing sites might involve costly, and perhaps controversial, retrofitting, while others express caution over community-managed projects, and the potential for these to fail, leaving the council with an unwanted reputational or financial legacy. There is also a view that projects like this may need the additional inspiration of a champion, a strong political leader who can secure the necessary commitments and make things happen. But perhaps the final word on this should go to the respondent who thinks it is worth allowing local people to act on their increasing green commitment, and to 'have a go' at doing 'the right thing'.

'There are several local constraints that come into play... The micro-projects are more easily transferable into our environmental context.'

Lille

'[Green art] is definitely doable, it's definitely something we could do. Could we do more? Yes. That approach is definitely possible.'

Southend

'Something, somewhere, people are getting switched on to doing the right thing... if you make someone else think "I'll have a go then", that's great.'

Cambridge

Appendix 1: Feedback

Feedback on the interviews was positive. Several respondents expressed the view that the process had been interesting:

'Thanks for the interview, super-interesting. Things to get passionate about.'

'This is going to be a bit interesting. This is going to be really interesting.'

Others said it had made them think:

'I didn't know I was going to have to think today.'

'Some questions I really had to think about.'

Or that they had enjoyed the experience:

'Okay, I have not seen this [card sorting] before in an interview... this is a fun game, it's good.'

'That wasn't as painful as I thought it was going to be.'

And they thought the results would be useful:

'I'm very much interested in what your work is going to bring.'

'When you do work like this, you will learn a lot... and hopefully we will learn from your learnings.'

One, however, was disappointed:

'I was hoping to at least win a fridge or something.'

Appendix 2: Interview script

Introduction (3 mins)

Thank you for agreeing to see me today. I'll be asking you a short series of questions about your experience in working with, or supporting, green infrastructure projects in your authority. I emphasise that it's your experience and your perceptions that I'm interested in, you don't have to be an expert and there are no right or wrong answers.

I want to assure you again that the whole process is confidential. Other people may know that you're taking part, but I won't use any answers you give me in a way that will identify you as the source, or to criticise or embarrass you or your organisation.

I say that because I want you to tell me not only the positive aspects of working with green infrastructure in this authority, but also any difficulties or issues that come up. The issues that hinder work on green infrastructure are a very important dimension of this study, not least because they may help direct future research and funding.

Understanding of GI (5 mins)

1. Let me start, then by asking: What would you say are the essential qualities of green infrastructure, that make it more than just green space or planting?
2. How well do you think decision-makers – senior officers and elected councillors - in your authority understand the concept of green infrastructure?

Benefits and obstacles (12 mins)

[Card pack 1/ card mat 1]

3. On these cards are some of the benefits that might arise from green infrastructure projects. Can you please put them into three piles, according to whether you think these benefits are currently highly rated by those who make decisions about GI in your city, have some importance but are not a priority, or are not currently very important as far as your city is concerned.

Cards:

Improved public health	*More attractive places to live*	*Resilience to extreme weather*
More opportunities for recreation	*Supporting safer active travel – walking and cycling*	*Protecting and enhancing biodiversity*
Increased land and housing values	*Carbon capture*	*Noise reduction*
Reducing the 'heat island' effect	*Attracting new investment*	*Reducing pollution*

[Card pack 2/ card mat 2]

4. On these cards are some of the obstacles that might arise in developing green infrastructure projects. Can you again please put them into three piles, according to whether you think this has been, or might be, a serious obstacle for a GI project in your city, an obstacle that's relatively easy to address, or not an obstacle at all.

Cards:

Addressing ongoing revenue costs e.g. of maintenance	*Public scepticism over value*	*Securing funding*
Difficulty proving value in comparison with non-GI approaches	*Limited awareness or understanding of GI*	*National planning policy support for GI*
Need to build partnership with other departments	*Need to build partnership with other organisations*	*Conflicting priorities within the local authority or partners*
Securing political support for GI	*Your authority's capacity to do the work needed*	*Convincing developers to take this kind of approach*

[Note where cards go, explore reasons

Funding (8 mins)

[Note: funding was already suggested as an obstacle, so bear in mind what you already have on this]

5. How have Green Infrastructure projects been funded in your city?

6. [Is it difficult/You said it was difficult] to get funding for this type of project? Is it more difficult than getting money to, for instance, plant trees or to create a play space as part of a development?

7. [*Showcard A*] Here is a list of some funding mechanisms that might be available to a local authority with a suitable GI project.

Green loans from banks
Green bonds from government
Privately-owned public spaces (POPS)
Policy performance bonds
Impact investments
Crowd-funding
Philanthropy

Have you come across any of these ideas before?

8. Have [you/your officers] looked at how other authorities, here and in other countries, fund their GI projects?

Approval and evidence (15 mins)

9. Who has to approve a green infrastructure project in your city?

10. What is the process for getting a green infrastructure project approved in your authority?

11. What evidence would you have to provide to support a GI proposal?

How is that evidence expressed? Do you use measurable indicators, or more general statements?

12. What kind of financial evidence do you have to provide?

Again, how is that kind of evidence expressed? Do you use measurable indicators, or more general statements?

13. [*Showcard B*] Here are some different types of evidence that might be used to support a green infrastructure project.

Evidence of direct environmental benefit to humans (*e.g. improved health, reducing noise and pollution*)
Evidence of indirect environmental benefit to humans (*e.g. urban cooling, carbon capture*)
Evidence of a more general environmental benefit (*e.g. improved biodiversity, habitat protection*)
Evidence of direct social benefit to humans (*e.g. more space for recreation, safer walking and cycling*)
Evidence of indirect social benefit to humans (*e.g. strengthening communities, linking communities*)
Evidence of direct economic benefit to the community (*e.g. reducing costs of dealing with extreme weather*)
Evidence of indirect economic benefit to the community (*e.g. increasing land values and property prices, more attractive places to live*)
Evidence of more general economic benefit (*e.g. attracting external funding, new income streams for the Council*)

Which of these types of evidence would you say would carry most weight with those who have to approve a project in your city?

14. So how would you summarise the formula for success in getting a GI project approved in this city?

15. Is it any more difficult than any other development project of a similar scale?

Tools and valuations (5 mins)

16. [*Showcard C*] Here is a list of some of the tools that are available to help assess the impact and monetary value of green infrastructure projects.

BREEAM	*GI Valuation Toolkit*	*Nature Value Explorer*
BEST	*iTree Eco*	*Earth Economics GI Co-Benefits Valuation Tool*
CAVAT	*InVest*	*CNT Guide for Green Infrastructure*
ARIES	*VALUE*	*Greenkeeper*
Ecoplan-SE	*TESSA*	

It's only a partial list, but are any of these tools familiar to you? [*tick above*]

[*if they are, ask*]

17. How useful was this tool?

How easy was it to use?

How much do you trust the tool to give you a realistic result?

Did you have to source data from elsewhere to operate the tool?

[*If Yes*] How easy or difficult was that?

18. How confident are you about this kind of tool?

How difficult is it to gather the evidence the tool needs?

Project manager supplementary questions (20 mins)

I want to ask now some specific questions about your Nature Smart Cities project.

PM1. Why did you select this project in particular to be part of Nature Smart Cities, rather than other projects you might want to deliver?

What are the key factors that led you to develop this project?

PM2. How easy or difficult was it to secure approval for this project from your local authority?

PM3. Have you carried out any baseline study to allow you to measure the difference your project will make?

What parameters are you expecting to measure?

How will you measure those?

PM4. Have you calculated a monetary value for this project, or for the outcomes you expect from it?

PM5. [*Showcard D*] Do you expect this project to do any of these things?

Save the Council money in the short term
Save the Council money in the longer term
Generate immediate external investment
Provide a basis for future external investment
Produce economic benefits for residents or local businesses
Produce more economic benefit than its overall cost

PM6. Have you been able to calculate or estimate what these savings or economic gains might amount to?

Would you be willing to share that data, in confidence, with the academic partners exploring valuation of GI?

PM7. In the absence of the Nature Smart Cities opportunity, would this project have gone ahead as it is, been reduced in scale, or not happened at all?

Finally, (3 mins)

19. One final question. Of all the green infrastructure projects you've come across, whether in your own authority or elsewhere, which one impresses you most as an example for other authorities to follow or be inspired by?

And what is it that impresses you about that project?

20. Have you looked into the financial aspect of that project? [*Thanks and close*]

Appendix 3: Invitation material

A3.1 Additional information for participants

The interviews will explore people's experience of delivering green infrastructure projects of various types and scales, and will include areas such as

- the benefits the local authority expects to gain from the project or projects, and how well these are recognised across the authority
- any problems encountered in getting projects from the design stage through to on-the-ground delivery, and how these might be, or have been, overcome
- the receptiveness of the local authority (officers and elected councillors), and local public opinion, to green infrastructure projects, and what information is needed to gain political (and funder) support
- the approval and funding processes involved in turning GI plans into reality
- the usefulness of any toolkits or scoring systems to demonstrate the value of projects, financially and in other ways

The questions will be drafted so as to allow responses both from officers working with GI and from politicians, and we appreciate that not everyone will be able to answer every question. Also, we would want to emphasise that there are no right or wrong answers! We also don't expect everyone taking part to be an expert; what we want is people's opinions and perceptions, as these will give us an insight into how things work, and what might help to make the process work better.

For most people the interview will probably last around 50 minutes. If an interpreter is needed, then of course that will mean additional time. A couple of questions use materials for you to look at, and these are available in both English and Dutch.

Everyone taking part will be sent some detailed information about the project, what we will do with the information obtained, and how we ensure that personal data is properly stored and processed. This information will be sent to everyone who is suggested as a participant, before they agree to take part. It includes an absolute guarantee of confidentiality, and allows anyone to withdraw, at any time, without explanation.

A3.2 Email invitation

Dear [name]

[Name] will have told you about the interview programme we are running as part of the Nature Smart Cities project.

I am a researcher working for Imperial College, London, and will be visiting [city] during the week of 9 December to carry out the interviews. [Name] has given me your name as someone who may be willing to help with this and I am writing to invite you to take part, and if possible to arrange a suitable time, date and place for this.

In summary, the interviews will explore your experience of delivering green infrastructure projects of various types and scales, the problems you encounter (both politically and technically), the receptiveness of your authority, and your public, to this kind of approach, and the funding issues that arise. I appreciate that not everyone will be able to answer every question; and I would want to emphasise that there are no right or wrong answers!

Each interview will last about 50 minutes. There is absolutely no compulsion to take part, but I hope you will, as your insight will certainly be of value to the study. But if you prefer not to, please let me know and I will remove your details and ensure you are not contacted again. I would very much prefer to conduct the interview in English – I don't speak [French/Dutch/Flemish] at all, I'm afraid - but it may be possible to find an interpreter if needed.

If you are happy to take part, please review the list of dates and times shown below and let me know which would suit you.

[List of dates, times, locations]

I'll then send you an information sheet, with more detail about the research, and how we will handle your information, together with a consent form, as required by GDPR.

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