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Using the Business Model Canvas to increase the impact of green infrastructure valuation tools

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Keywords

Business Model Canvas, valuation tools, urban forestry, i-Tree Eco, CAVAT

Abstract

There is a range of tools available to value the ecosystem services provided by urban green infrastructure including i-Tree Eco, CAVAT, GI-Val, and more. These valuation tools quantify the natural environment in order to incorporate it within urban decision-making processes. In the UK, valuation tools have been used successfully to calculate replacement values for trees (e.g. Southwark, London), enhance the value of green infrastructure at the design stage (e.g. Wirral), and secure resource for future planting and maintenance (e.g. Wrexham). However, these valuation tools have not consistently had the desired positive impact on decision-making. In response, we have adapted the Business Model Canvas for use in green infrastructure valuation (BMC₄GI) to create a framework that focuses the valuation process on the Change Objective, i.e. the decision that valuation intends to influence. The BMC₄GI outlines nine building blocks to consider prior to valuation, namely; (i) Change Objective, (ii) Target Audience, (iii) Key Activities, (iv) Key Resources, (v) Key Partners, (vi) Channels, (vii) Audience Message, (viii) Cost Structure, and (ix) Revenue Streams. We link the BMC₄GI to four general scenarios where valuation has proven to be successful, and provide a working example of the template based on green infrastructure valuation on a redevelopment site. BMC₄GI can support any approach to green infrastructure valuation, globally, and we invite others to apply BMC₄GI to create a shared case study library of good practice in green infrastructure valuation.

Introduction

In recent years, there has been a rapid increase the number and range of valuation tools that quantify green infrastructure features, or the ecosystem services they provide (see Table 1 and references therein). Some tools, such as Greenkeeper and the Natural Capital Planning Tool (NCPT) have originated from applied academic research (Holzinger et al., 2015), whilst others such as i-Tree Eco (e.g. Moffat and Doick, 2019), CAVAT (Doick et al., 2018) or GI-Val (Mersey Forest, 2011), have developed from professional best practice. All tools have the same underlying premise: that quantifying or ascribing a monetary value to green infrastructure will support decision-making processes, and deliver a change for the better in the way that local policy, investment, design and management decisions affect environmental assets. Valuation tools are particularly relevant in urban areas, where land and grey infrastructure assets have a defined monetary value and financial profit and value for money form the basis of decisions.

Unfortunately, the influence of valuation tools on decision-making has been inconsistent, with several case studies showing that valuation had limited impact on tree policy, urban forest management, or the funding available for green infrastructure (Raum et al., 2019; Jaluzot and Evison, 2016). In response, we present a novel approach that uses a simple and widely used business template, the Business Model Canvas (BMC; Osterwalder and Pigneur, 2010), to increase the impact of green infrastructure valuation tools. The BMC provides a framework to design an effective valuation process that considers from the outset how valuation will impact decision-making, by focussing efforts on the **Change Objective**, i.e. the decision to be influenced. It therefore ensures that valuation is an instrument to lever change, rather than a technical exercise conducted in isolation. We call this BMC₄GI (Business Model Canvas for Green Infrastructure).

Prior to using a valuation tool to influence a decision, one must first evaluate whether valuation has the potential to impact the Change Objective. Accordingly, this short communication initially overviews those scenarios where valuation has previously proven successful. We subsequently introduce the BMC₄GI, and describe how it supports the application of green infrastructure valuation tools, and provide a working

example based on green infrastructure valuation on a redevelopment site. Lastly we consider the conceptual and practical contributions of the BMC₄GI for urban forestry, internationally.

Using green infrastructure valuation tools in urban areas

There are four general scenarios where using valuation tools can provide supportive information for urban decision-making processes in order to improve the outcome for green infrastructure and the natural environment more broadly. These are shown in Figure 1, and include: a) achieving greater retention of existing green assets; b) securing more commensurate compensation when green assets are lost; c) enhancing design outcomes or how those outcomes are communicated; and, d) enabling evidence-based management. In the UK, there are several examples where one or more valuation tool have been used effectively, for one or more of these scenarios; Table 1 provides summaries of the different tools and their applications. For example, CAVAT has been utilised by several local authorities including Birmingham City Council and Leicester County Council to secure commensurate compensation following tree loss, for example from insurance companies following a road traffic accident (S Needle and A Wilson, 2019; pers. comm. 9th October 2020; Fig 1a). In London, a CAVAT valuation on the Elephant Park development led to mature tree retention, reinvestment in tree planting throughout the borough, and innovative design and construction procedures in order to protect large trees despite complex building and demolition onsite (Neilan and Fay, 2018; Fig 1a, 1b). On a large development site in North West England, an assessment using GI-Val showed that an initial green infrastructure investment of £2 million could contribute £16.7 million of other economic benefits, convincing the developer to commit early investment in green infrastructure, including large scale tree planting and further temporary and permanent greening of some sites (Mersey Forest, 2011; Fig 1c). In Wrexham, using i-Tree Eco led to executive level support of the Tree Strategy, maintaining a tree officer post both in the planning and the highway teams, and commitment to a budget for tree management that enabled more diverse and extensive planting than previously (Rumble et al, 2015; Fig 1d). Lastly, Cherwell District Council utilised a range of tools, including i-Tree ECO, GI-VAL, B_{EST} and NCPT to inform green infrastructure decision-making within the region (Smith et al., 2018; Fig 1c, 1d).

However, there are other case studies where valuation did not impact decision-making processes or deliver the desired change (Raum et al., 2019; Jaluzot and Evison, 2016). Following a systematic review of i-Tree Eco studies in the UK, Raum et al. (2019) presents eight lessons to enhance the impact of valuation, namely: (i) clearly frame the problem; (ii) ensure management roles are understood; (iii) be realistic about time and resource required for inputs; (iv) ensure outputs meet stakeholder needs; (v) encourage stakeholder engagement from the start; (vi) tailor outputs for different audiences; (vii) engage champions from users groups; and (viii) be prepared and aware of changing contexts, such as budget cuts or restructuring. These lessons highlight the importance of ensuring that valuation is part of a holistic business model that considers not only which partners and resources are required for success, but how the valuation process should engage and communicate with these stakeholders effectively.

Business Model Canvas for Green Infrastructure Valuation (BMC₄GI)

There are multiple ideas of what constitutes a “business model” (Zott et al., 2011). Traditionally, business models outline how a venture can deliver services or benefits to customers, whilst capturing enough revenue to continue operations, and the success of the venture is measured in terms of financial profitability (Ovans, 2015). Applying this lens to the natural environment, where profit is measured in terms of environmental benefits rather than financial gain, is problematic, although sustainable business models that incorporate environmental and social responsibility, whilst still maintaining a financial profit are becoming increasingly common (Joyce and Paquin, 2016; Upward and Jones, 2016; Evans et al., 2017). Alternatively, Casadesus-Masanell and Ricart propose that a business model *is a reflection of the firm's realised strategy* (2010, p195) i.e. what an organisation needs to do in order to deliver their strategy. Using this lens, a business model can be considered as the framework to realise a successful valuation i.e. that quantifying green infrastructure will deliver a change for the better for the natural urban environment. The BMC (Osterwalder and Pigneur, 2010) is particularly suited for this context. It is an internationally established approach for developing and

describing business ideas that is used widely by early stage entrepreneurs, large and small organisations and academics, for a range of applications. It is intuitive, quick to learn, and free, and is therefore well-suited for those working in green infrastructure delivery in or with municipal authorities, who are often time and resource poor.

The BMC is comprised of nine building blocks, including: key partners; key activities; key resources; value proposition; customer relationships; channels; customer segments; cost structure; revenue streams (Osterwalder and Pigneur, 2010). By populating the different building blocks, BMC users can deliberate any business idea and create the strategy that will realise their aim. As the BMC focuses only on economic value, following on from Joyce and Paquin (2016), we have adapted the nine building blocks of the BMC to provide a framework to realise a successful green infrastructure valuation, renaming the model BMC₄GI (Table 2a). In the following text, we discuss the modification of the BMC for this context, and describe the definitions and considerations associated with each of the nine blocks (i)-(ix) of the BMC₄GI, linking them to the valuation scenarios shown in Figure 1. The BMC₄GI should be completed in the conceptualisation stage, to ensure the valuation process is designed to impact the decision.

(i) The value delivered to the customer (*Value proposition*) is central to the BMC. In BMC₄GI, this core building block is focused on the *Change Objective*, the decision that valuation intends to influence. In Figure 1a, the *Change Objective* is securing balanced decision-making when addressing subsidence cases preventing unnecessary tree removal. In Figure 1c, the *Change Objective* is maximising the ecosystem services provided by a new design, and valuation enables comparison between different planting schemes.

(ii) Customers (*Customer Segments* in BMC) comprise the heart of any business model. In BMC₄GI, these are the *Target Audience*, i.e. the different audience segments that the valuation results must reach to deliver the envisioned *Change Objective*. It might be beneficial to break the *Target Audience* into different segments with common needs, common behaviours or other attributes (e.g. preferred communication channels), and the business model may define one or several large or small audiences. In Figure 1a, the *Target Audience* includes the subsidence engineer, insurer and the homeowner. In Figure 1d the *Target Audience* are the asset owner or manager, those who compile the asset register, and the budget holders.

(iii) There are a range of *Key Activities* to support the *Change Objective*. In BMC₄GI, this building block considers the design parameters (choices and actions) of the valuation, clearly linking valuation design to influencing the *Change Objective*, and meeting the needs of the *Target Audience* and *Key Partners*. The *Key Activities* include:

- Identifying the scope of the valuation (i.e. green infrastructure type(s), geographical area) that best supports the valuation need, within the available *Resources*.
- Selecting the appropriate valuation tool for the valuation need (Table 1) to ensure the right tool is used in the right place. Combining the outputs from several tools (e.g. Smith et al., 2018) may be necessary to achieve the *Change Objective*. Monetary valuation may not be appropriate; for example, the NCPT delivers an impact score (Hölzinger et al., 2015). Moreover, qualitative descriptions or narratives can provide nuances that numbers alone cannot, which can be more compelling to some audiences.
- Setting the valuation tool parameters. Many valuation tools offer different options in the type of data they can take, or the range of ecosystems services they account for. Sampled field data is commonly used with i-Tree Eco (e.g. Rumble et al., 2015; Rogers et al., 2018; Moffat and Doick, 2019), and when collecting on a sample (rather than exhaustive) basis, decisions regarding the number of sample points and approach to stratification will determine the spatial scale and quality of results.
- Anticipating result use and dissemination is paramount to ensure the output is appropriate for the *Target Audience*. Indeed, involving some of the anticipated users of the valuation result in the data collection and valuation process itself can enable the *Target Audience* to understand and appreciate the valuation results (Moffat and Doick, 2019).
- Embedding valuation process into wider strategy or policy. Applying the valuation result to affect change will depend on the contextual initiatives, processes or policies (Jaluzot & Evison, 2016; Hand and Doick, 2018; Raum et al., 2019). It is important to identify these dependencies at the start, and generate an agreement of how the valuation results will be used by the *Target Audience*.

(iv) Appraising the *Key Resources*, including the data, time and money available for valuation is critical. Data may need to be sourced from outside organisations, or require field collection. Some valuation studies, such as the Ealing and Petersfield i-Tree projects trained volunteers to sample data (Rogers et al., 2018; Moffat and Doick, 2019). Although valuation tools come with technical guidance (Table 1), some do require expert guidance (e.g. CAVAT), and users should be wary of technical pitfalls, such as double counting, ill-applied benefit transfer, lack of sensitivity analysis, inadequate discounting, and poor input data, which can negatively impact the validity of the valuation results (Whitehouse, 2017).

(v) In BMC₄GI, the *Key Partners* are the network of key stakeholders, allies and partners that are essential to make valuation happen, and ensure the results can reach and influence the decision-makers. In Figure 1a, this could be the insurance company processing the subsidence claim; in Figure 1b it could be the elected members of the City Council's planning committee and the planning officers who can approve the Masterplan, and/or the developers, who can determine the quantity, quality and variety of green infrastructure within the site plans. It could also be a "Champion", who advocates the *Change Objective*, who can steer the project forward (Raum et al., 2019). Other *Key Partners* are: data holders; those with marketing expertise and dissemination capacity; experts to guide the use of the chosen valuation tool, or give insight and feedback on shaping valuation results to maximise their impact on the target audience; and, financial sponsors.

(vi) The *Channels* block describes how (i.e. the media through which) the valuation results will reach the *Target Audience*. Effective communication should span a diversity of media platforms (Nisbet and Sheufele, 2009). For example, the Ealing i-Tree project used leaflets, social media, the labelling of individual trees, and in-person stakeholder visits to engage the local community (Rogers et al., 2018). Policymakers often prefer face-to-face contact or email/telephone conversations rather than publications and multiple page research reports (Janse, 2008). Integrating communication channels ensures a consistent strong message and prevents mixed-messaging.

(vii) The *Audience Message* (*Customer Relationships* in BCM) block links closely to *Channels*, and considers which format and content will most effectively communicate the valuation result to the *Target Audience*. This is in part determined by the communication *Channel* (e.g. Twitter is limited to 280 characters and an image), and the message will need to be tailored to the different segments of the *Target Audience* (Raum et al., 2019); some segments will prefer a succinct overview of the key messages whereas others require access to raw data and methodological details.

(viii) The *Cost Structure* block describes all costs incurred to conduct the valuation and secure its impact on the *Change Objective*. This includes both the costs of using the valuation tool (e.g. data acquisition, expert input) and the costs associated with delivering the valuation results to the *Target Audience* in the most effective way to secure the *Change Objective*. These costs can be calculated after defining *Key Activities*, *Key Resources* and *Key Partnerships*.

(ix) Lastly, the *Revenue Stream* block articulates how the costs identified in to deliver a successful valuation initiative will be met. Revenue may be procured from one or multiple sources such as the in-house budget (e.g. Rumble et al., 2015), corporate sponsorship, charity contributions (e.g. Rogers et al., 2018), research funding (e.g. Smith et al 2018), community volunteers (e.g. Moffat and Doick, 2019), and more.

Table 2b shows a working example of the BMC₄GI applied to green infrastructure valuation on a redevelopment site where developers plan to remove the existing mature trees and redesign the landscape. In this example, a local tree advocacy group are campaigning for valuation to prevent unnecessary tree removal, and assure a net environmental gain for the development. Here, the *Change Objective* is to retain as much of the existing canopy cover as possible, and to obtain commensurate compensation for those trees which need to be removed, that can be reinvested into new green infrastructure within the same neighbourhood. The nine building blocks are completed to produce a strategic business model that supports valuation, to guarantee the process provides the necessary information and a pathway to influence the *Change Objective*. By populating the template, all aspects of the valuation such as key partners, resources, and approaches to communication and dissemination can be considered in detail at the outset, so that the

valuation is designed to influence the change objective, and that the key decision makers will receive and understand the valuation results.

Conclusions

By framing a business model as reflection of a realised strategy (Casadesus-Masanell & Ricart, 2010), we have adopted the BMC to provide a framework to design a valuation process that considers from the outset, how valuing green infrastructure can impact a decision. Although the case studies presented in this short communication are derived from the UK, valuation tools are used across the world (e.g. Baró et al., 2014; Elmqvist et al., 2015; Selmi et al., 2016), and the BMC₄GI is applicable globally, as a “bottom-up” approach, adaptable for any valuation context, to support the practical delivery of green infrastructure within the policy, design, and management arena specific to that urban environment. Indeed, we invite our international peers to apply BMC₄GI to create a shared case study library of good practice in green infrastructure valuation, and future research will support practitioners to use the BMC₄GI to build the evidence base and enable model development.

The BMC₄GI makes conceptual and practical contributions to the planning and design of urban green infrastructure. Conceptually, it translates a well-regarded business development model, the BMC, into a new research area, namely green infrastructure valuation. This novel and interdisciplinary application provides a new perspective on using business models within an environmental context, advancing the existing research (e.g. Joyce and Paquin, 2016; Upward and Jones, 2016; Evans et al., 2017). Practically, it provides an accessible template for urbanists in academia or professional practice who are involved in green infrastructure delivery. The BMC₄GI increases the impact of valuation tools by focusing the valuation process on the Change Objective to develop a strategy that realises the aim of valuation, i.e. that by quantifying green infrastructure it will deliver a change for the better in the way that local policy, investment, design, and management decisions affect the urban natural environment.

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Tables & Figures

Table 1: An overview of valuation tools commonly used in the UK and linked to the valuation scenarios shown in Figure 1.

Tool	Type of GI	Valuation scenario	Brief Overview	Technical Guidance	Example Applications
BEST (Benefits Estimation Tool – valuing the benefits of blue-green infrastructure)	range	a, c, d	Provides assessments for multiple ecosystem services. Intended for sustainable drainage schemes. Expert input not required.	Horton et al., 2015	Smith et al., 2018
Capital Asset Value for Amenity Trees (CAVAT) Full Method	individual trees	a, b, c	Values trees as public assets using cost of equivalent replacement (COR) approach. Uses include planning for development, and to calculate compensation for damaged public trees. Requires expert input.	Doick et al., 2018	Doick et al., 2018 Neilan & Fay, 2018 Smith et al., 2018
Capital Asset Value for Amenity Trees (CAVAT) Short Method	tree population	d	Values tree populations as a public asset using a simplified COR approach. Enables strategic management of public tree stock. Expert input not required.	Doick et al., 2018	Doick et al., 2018 Smith et al., 2018
GI-VAL	range	a, c, d	Provides assessment of eleven benefits of green infrastructure, with monetary, quantitative and qualitative outputs. Useful for design. Expert input not required.	Mersey Forest, 2011	Rogers et al., 2017 Smith et al., 2018
i-Tree Eco	tree population	a, c, d	Values annual and accrued ecosystem services provided by trees. Optionally links with CAVAT. Useful to communicate benefits of trees for strategic management. Expert input required.	i-Tree Eco, 2016	Andrew & Slater 2014, Hand & Doick 2018 Jaluzot & Evison 2016 Raum et al., 2019 Rogers et al., 2011 Rogers et al., 2018 Smith et al., 2018
Natural Capital Planning Tool	range	a, c, d	Assesses the impact of a plan or development on the site's natural capital assets and ecosystem services they provide, over 25 year post development period. Developed for non-expert use.	Hölzinger et al., 2015	Hölzinger & Grayson 2018 Smith et al., 2018

Table 2a: BMC₄GI –a template and framework to ensure that green infrastructure valuation is focussed on impacting a decision. Adapted from the Business Model Canvas (Osterwalder and Pigneur, 2010).

<p>(v) Key Partners</p> <p><i>Who makes the decision? Who can influence the decision maker? Who provides access to data? Who should deliver the valuation outcome to your target audience? Who can provide early feedback and advice on communicating with target audience?</i></p> <p>Answering these questions will inform your choice of ‘Champion’ for the valuation project, who can advocate the valuation outcomes across all Key partners and Target audiences.</p>	<p>(iii) Key Activities</p> <p>Choosing scope <i>What green infrastructure do we need to value? Over what geographical area?</i></p> <p>Choosing valuation tool(s) <i>What valuation tool delivers the value required for the Change Objective? Are multiple tools required? Is monetary valuation the best approach? Would narratives add value to numerical valuation?</i></p> <p>Setting the parameters of chosen tool(s) <i>If you collect new data, will it be sample based, or an exhaustive approach? If samples are used (e.g. with iTree Eco) does the data need to be stratified for use with your scale or context?</i></p> <p>Anticipating results dissemination and use</p> <p>Embedding valuation process into wider strategy or policy</p> <p>(iv) Key Resources <i>What data/time/funding are available to undertake valuation? Does the valuation tool or the project require expert guidance? Do you have the necessary input data? Will this need to be collected?</i></p> <p>Data <i>Will you use existing data? Do you hold this data in house or do you need to source this data from others? Will you need to commission new data?</i></p> <p>Expertise/time <i>How much of your time is needed? Who within your organisation and partner organisation do you need time from? Will any aspects of the work require or benefit from the use of consultants, and/or involve volunteers?</i></p>	<p>(i) Change Objective <i>Which decisions (and associated behaviours) is the valuation aiming to change?</i></p> <p><i>What difference or benefit would providing a valuation result bring to the Target Audience?</i></p> <p><i>How will valuation influence the decision?</i></p>	<p>(vii) Audience Message <i>What are the preferred forms of communication of each segments of the Target Audience, and how does this influence the message content?</i></p> <p><i>Will some users need raw data? Will some users prefer summaries? Is written, oral, visual communication best?</i></p> <p>(vi) Channels <i>Will the target audience know (and have the motivation to) come to you, or do you need to get the information to them?</i></p> <p><i>How will the evaluation results reach its target audience? Will there be a launch or some other events? Would reporting by media be desirable? Will social media be used? Will there be some form of street-based advertisement be used?</i></p>	<p>(ii) Target Audience <i>Who are the key individuals and/or groups whose decision(s) - and associated behaviours- the valuation is designed to change?</i></p>
<p>(viii) Cost Structure Data acquisition Data processing and analyses Data presentation</p>			<p>(ix) Revenue Streams In kind: Volunteer time, Donated resources Sponsorship Grants In house budget</p>	

Table 2b: The BMC4GI template applied to a redevelopment scenario in an urban neighbourhood where the developers intend to remodel the existing landscape and remove mature trees to maximise development potential. A local tree advocacy group are campaigning for valuation. BMC4GI adapted from the Business Model Canvas (Osterwalder and Pigneur, 2010).

<p>(v) Key Partners The developer and Local Planning Authority (LPA) are decision makers.</p> <p>An environmental consultancy with trained arboriculturists will undertake the valuation.</p> <p>The local tree advocacy group are campaigning to retain the trees.</p> <p>Community volunteers are requires to share their tree stories.</p> <p>Valuation Champion – a resident who lives locally, and has a prominent role in the environmental consultancy, and is respected by all audience segments.</p>	<p>(iii) Key Activities Choosing scope A monetary value is needed to demonstrate scope of proposed loss, deter unnecessary removal and provide a sound basis to shift from a ‘net loss’, to a ‘net gain’ approach. All onsite trees need to be assessed.</p> <p>Choosing valuation tool(s) CAVAT (Full Method) values trees as a public amenity and provides a monetary output for each individual tree. CAVAT could be combined with i-Tree to gain monetary valuations of ecosystem services such as carbon storage and sequestration, or storm water alleviation. Locals’ stories/reflections on the value of trees to be presented alongside monetary outputs – to provide a more holistic understanding of value.</p> <p>Setting the parameters of chosen tool(s) Each mature tree needs to be assessed using CAVAT Full method.</p> <p>Anticipating results dissemination and use Build an early understanding among LPA target audience that the valuation results will enable them to better assess and articulate expected outcomes from the development proposal – with implications on the wording of planning conditions (i.e. the negotiations on the specifics of the landscape proposal should be put on-hold until valuation results are available)</p> <p>Embedding valuation process into wider strategy or policy Ensure LPA development control planners use the valuation results to set out ‘net gain’ requirement in the planning conditions associated the planning consent granted. Highlight to the LPA the opportunities to minimise future conflict if replicating the valuation approach for other major development sites across the borough. Highlight to the developer the marketing opportunities associated with being able to robustly demonstrate ‘net gain’ (despite possible unavoidable tree removal) – so that they consider re-using the approach on future developments, reducing risks of conflicts with local communities and increasing chances of securing swift planning consent.</p>	<p>(i) Change Objective</p> <p>Retain as much of the existing canopy cover as possible, and secure ‘net gain’ from the development scheme (rather than ‘net loss’)</p>	<p>(vii) Audience Message</p> <p>The developer and the local authority have requested summarised data, with raw data and a methodological statement presented as Appendices.</p> <p>Narratives will combine text with pictures of the trees on site.</p> <p>For the developers, the economic benefits of green infrastructure retention is an important part of the content (from the valuation approach – e.g. GI-VAL, or from other case studies). The LPA need reassurance about long-term maintenance costs.</p>	<p>(ii) Target Audience Site developer and their landscape team. Can the new buildings be built around the existing mature trees to create new housing within a mature landscape?</p> <p>LPA planning committee member, development control officer, and tree officer. What could ‘net gain’ look like? Are all proposed tree removals unavoidable? If some tree removal is unavoidable, could commensurate funding for planting be guaranteed, and could the new green infrastructure be planted locally and be adopted by the authority to ensure long-term maintenance?</p> <p>Local community (pressure group onto developer and LPA)</p>
<p>(iv) Key Resources Data: all data will need to be collected for valuation – no existing data.</p> <p>Expertise/time: The valuation needs expert input to inspect each tree to provide a CAVAT value. A small team could undertake the valuation more efficiently if time is limited. Volunteers from the community group will collect stories/reflections/memories of the trees from the community.</p>			<p>(vi) Channels Consultancy to produce a report for developer and local authority.</p> <p>Champion to provide a presentation and Q&A session to the developer, and local authority.</p> <p>The community group will share tree stories and selected valuation results via social media and community meetings throughout the process.</p>	
<p>(viii) Cost Structure Costs include expert time to undertake CAVAT valuation, collect and compile the narrative data, write the report, and meet with Key Partners. This includes hosting a community night to share the tree narratives.</p>

In subsidence cases or other circumstances where tree removal is considered, a tree value allows a more balanced, evidence-based, assessment.

Whether resulting from authorised removal or wilful damage, tree loss prompts commensurate compensation payment, allowing adequate re-investment.

The valuation results and the associated discussions on the benefits and uses of the proposed design yields insight into the best option and enables evidence-based design.

Whether by enabling inclusion of green features in asset registers, or providing a common language on returns, valuation brings enhanced expenditure planning and widened collaboration.

Figure 1: The different scenarios where valuation has successfully influenced decision-making for better environmental outcomes. Adapted from Jaluzot & Ferranti, 2019.