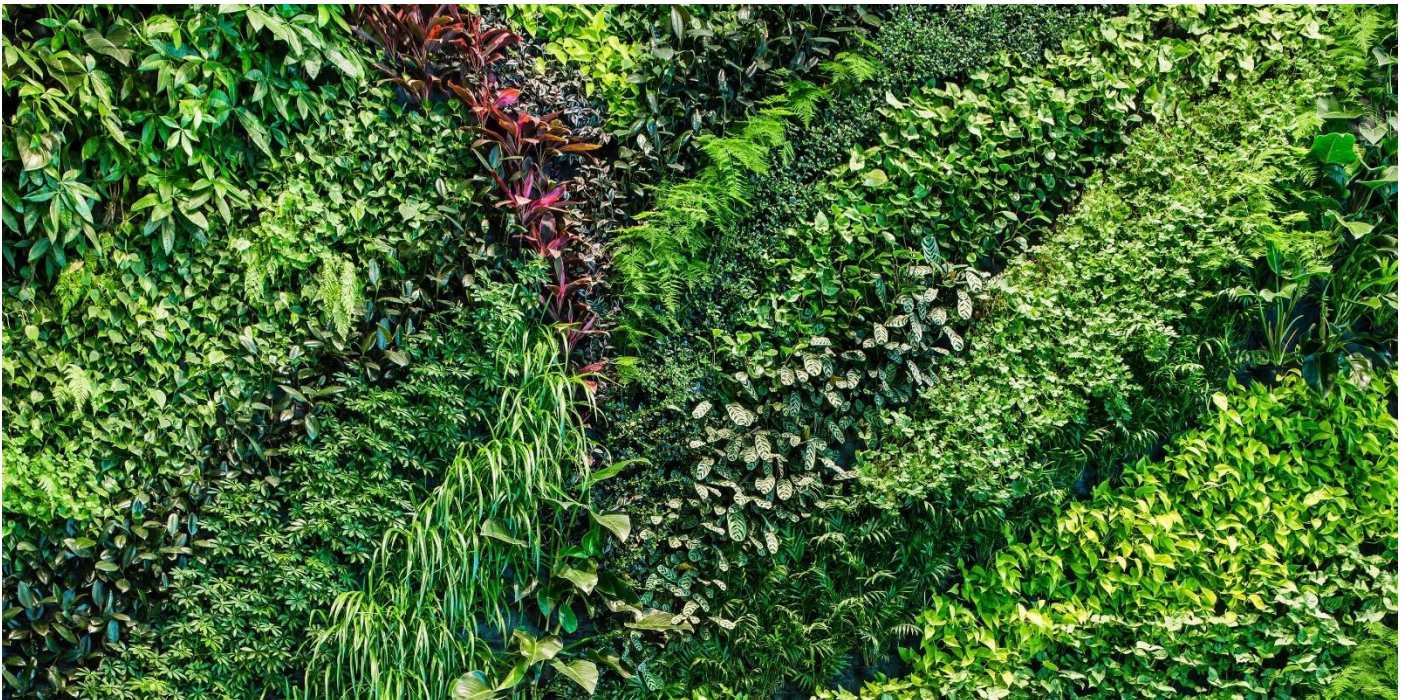


Green Infrastructure and Urban Transformation: Interdisciplinary Showcasing Workshop



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Introduction

“We want to encourage more investment, in part by doing a better job of explaining what ‘good’ green infrastructure actually looks like.”

H.M. Government (2018)

Green Infrastructure (GI) as both a research topic and policy objective, is “uniquely positioned at the intersection of a broad range of disciplines that straddle both the physical and social sciences”. In recent years there has been considerable growth in GI-related academic research, due to evidence of a catalogue of benefits related to biodiversity, climate change, health and wellbeing, amongst others. This agenda is notable both for its rapid emergence but also for the diversity of perspectives and the potential for productive cross-discipline learning. However, the intersecting and frequently competing demands for GI present a considerable challenge for policy and research.

The workshop

To begin to address these challenges, the *Green Infrastructures and Urban Transformations Workshop* brought together a range of stakeholders from across the Northwest of England. The aim of the workshop was to build up a holistic picture of current research and activities in GI, providing a forum in which stakeholders could share insights from a variety of specialist fields. The workshop aimed to foster a dialogue amongst different perspectives, sharing best practice, common challenges and conceptual developments. It represented a novel cross-sector networking opportunity for academic, industry and practitioner GI experts to reach across traditional silos, with the aim of fostering an interdisciplinary network. The workshop took place at The University of Manchester in June 2018 and invited speakers from across the North West of England including: The University of Manchester, The University of Liverpool, The Mersey Forest, Arup, Manchester City Council, Liverpool City Council, City of Trees and Incredible Edible.

Workshop participants

Tom Armour (Arup)

Jeremy Carter (The University of Manchester)

Adam Broadhead (Arup)

Dave Barlow (Manchester City Council)

Bryan Cosgrove (City of Trees)

Tom Nolan (The Mersey Forest)

Juliet Staples (Urban GreenUP, Liverpool City Council)

Catherine Highfield (Urban GreenUP, The University of Liverpool)

James Rothwell (GrowGreen, The University of Manchester)

Pam Warhurst (Incredible Edible)

Jack Benton (The University of Manchester)

Sarah Lindley (GHIA, The University of Manchester)

Matt Dennis (GHIA, The University of Manchester)

Janice Astbury (LOOPER, The University of Manchester)

Scope of the working paper

This working paper synthesises several key themes that emerged from the productive discussions that took place during the workshop. Five key themes were identified: Policy and governance, Interdisciplinary partnerships, Scale, Community and public realm, Value, and Mainstreaming GI.



Policy and governance



Interdisciplinary partnerships



Scale



Community and public realm



Value



Mainstreaming GI



Policy and governance

“The policy is not quite there yet”

Given the interdisciplinary nature of GI the governance of GI is complex. The governance mechanisms associated with GI and the policies that emerge based upon a growing evidence base were central to the workshop discussions. For some workshop participants, there was a feeling that GI policy is not quite there yet, despite the growing evidence of the multiple benefits.

Individual actors taking policy forward

Manchester City Council expressed that “**policies provide an indication of where we should go**” but that it was down to local stakeholders to realise the benefits of these policies. This led to certain actors stating that they were inclined to act themselves, in lieu of decisive policy-making in the area. Community organisations such as Incredible Edible sought to promote “**agitation at a grassroots level**” to shape conversations about GI policy and governance. Local government representatives were also keen not to miss opportunities associated with GI by waiting for central government, instead **engaging with other local stakeholders** to realise the benefits of GI.

Co-opting related policy agendas

In addition, the lack of coherent policy related to GI meant that in several instances **alternative policy agendas have been instrumental in implementing GI**. For example, in the case of Manchester the climate change agenda has been a big driver, “kicking the city into shape” in relation to GI. Practical action has been pushed forward by the cities’ climate change strategy, *Manchester: A Certain Future*, in which a bespoke GI strategy has been developed. In this case, the climate change strategy has enabled interventions to be used more productively.

Working collaboratively and collectively

As a result of this policy environment, a need to work “collaboratively and collectively” was recognised by many of the stakeholders. Some stakeholders highlighted how, in the current political climate, it was often about making the most of existing resources through such collaborative working. For example, in Greater Manchester GI is often linked into new developments concerned with place-making, including the new MMU zero-carbon campus. Improving connectivity and access to GI are also essential to this, for example, biodiversity stepping stones. A need for strategies to be “**part of a portfolio**” was also recognised in order to create an overarching community vision (→ Community and the Public Realm, Page 8). Subsequently, multi-disciplinary partnerships have been essential to fill the gaps in policy and governance related to GI.



Interdisciplinary partnerships

Realising the multiple benefits of GI

The diverse range of workshop attendees was testament to the increasingly multidisciplinary range of stakeholders interested in GI. Owing to the multiple benefits of GI, including ecological, social and physiological benefits, it is uniquely conducive to and demanding of interdisciplinary linkages.

GI encourages the **forging of links between different bodies**, be they public or private, or community-led. For example, the City of Trees Re-Leaf initiative is being developed in partnership with Manchester City Council and Salford City Council, and many other partners including Arup and Allied London. Meanwhile, the GrowGreen project focuses upon the interrelations between a range of stakeholders including United Utilities, social and private housing providers, the Environment Agency and the Highways Agency.

GI also encourages the “forging of links between **different jurisdictions**” on the basis of their ecological linkages. For example, the Greater Manchester Natural Capital Group, a regional organisation, has been instrumental in creating a forum for developing Manchester’s natural green spaces bringing together a diverse range of actors from across Local Authorities in Greater Manchester. This can help to breakdown what are often crude zonal approaches to planning and design in city regions (→ Scale, Page 7). GI also facilitates the transfer of knowledge between different disciplines and departments that tend to work in silos.

Sharing resources and expertise

Despite recognition of the unique ability of GI to forge such interdisciplinary links, stakeholders at the workshop recognised a **lack of events related to GI that bring these diverse actors together**. This was disappointing as alliances between stakeholders, especially academic alliances, can allow for bold visions and leadership on GI to be developed. There was general recognition that the workshop represented a unique forum for these types of initial interdisciplinary conversations. There was considerable interest in future events that would provide an opportunity for the sharing of resources and expertise, as currently conversations amongst those working on GI were too few and far between, certainly in the North West context. It was recognised that this might be due to the multiple specialisms involved across social sciences and physical sciences, despite this also being a considerable strength.

GI Showcase: Valuing Nature: Financing Green Infrastructure in London

Working with the **Greater London Authority (GLA)**, the Valuing Nature Network funded project examined the role that non-traditional stakeholders could play in financing and managing GI in London. Working with developers, local authorities, business improvement districts, social housing providers and environmental organisations the project identified commercial, socio-ecological and political support for the financing of green infrastructure and outlined where added buy-in from stakeholders could be generated. The project was shaped by the need for new financing models to be developed due to the ongoing austerity measures currently in place in the UK.

GI Showcase: City of Trees Re-Leaf

City of Trees Re-Leaf is being developed in partnership with **Manchester City Council** and **Salford City Council**, and many other partners including **Arup** and **Allied London**. The initiative recognises that the scope for creating large green spaces in the city centre are limited, however street trees offer the opportunity to breathe life into grey streets.

Urban street trees have an instant impact; boosting the local economy and making places more attractive for businesses, residents and tourists. They help to combat climate change, improve health and wellbeing, reduce surface water flooding and clean polluted water as well as tackle poor air quality.

In Manchester and Salford, City of Trees have identified over 1,000 potential locations across the city centre that would be suitable for street trees and ground-truthed these locations. City of Trees hope to plant the first trees as part of the initiative in 2018 and plan to re-leaf the city centre over the next 10 years, with the support of businesses, developers and individuals. City of Trees will partner with key organisations who work with vulnerable people across the city region, training them in relevant tree care skills and unlocking employment opportunities. The organisation is also seeking support for a 'Future Fund' which will not only deliver work in the city centre in the backdrop of a difficult financial climate, but also help maintain Greater Manchester's trees and woods for future generations.

GI Showcase: Daylighting

Adam Broadhead from **Arup** provided examples from across the UK and internationally to showcase the potential opportunities and the pitfalls for daylighting urban streams, based on almost 10 years of collecting case study data available at: www.daylighting.org.uk. Stream daylighting is the process of uncovering culverted (buried) watercourses and returning them to more natural conditions. This can bring a variety of direct and indirect environmental, social and economic benefits by restoring habitats, reducing flood risk, supporting urban regeneration and providing valuable amenity space for people in towns and cities. In this way, it can be an integral component of urban green infrastructure.



Scale

A focus upon the city region

The majority of the workshop participants were involved in organisations or projects that focused upon a city region, be it in Greater Manchester or Merseyside. As such, the workshop largely focused upon the **benefits of GI for the urban realm**, reflecting the focus of much of the research to date concerned with the multifunctional benefits of GI. This included city council representatives concerned with GI provision within a specific boundary, and research projects such as GrowGreen and Urban GreenUP that seek to evidence the benefits of GI in strategic locations across cities.

A landscape approach

Despite the focus upon the urban, workshop participants were critical of a problematic sentiment that they recognised within Government policy-making to date, that the environment is something “out there” rather than something that is experienced every day. This was expressed with reference to the recent Environment White Paper. Whilst most of the stakeholders and case study projects were focused upon the city region, there was considerable emphasis upon a “landscape approach to GI”, ranging from “edible landscapes” to advocating for a whole catchment approach to GI. For example, in relation to flood risk management it was recognised that the benefits of GI in a catchment are felt downstream in the form of reduced flood risk. Indeed, flood risk management is spatially dispersed and in a region such as Greater Manchester much of the GI resources that have a role in reducing flooding are beyond the boundaries of the Local Authorities. Subsequently there is a need for “**rural settings to be linked with urban outcomes**” when considering best practice in GI, rather than focusing upon the city region in isolation. Such a landscape approach highlights the need for a spatially-tiered approach to the governance of GI.

Spatially-tiered approaches to governing GI

The governance of GI traverses a range of scales, from community organisations and pilot experiments on the ground (e.g. LOOPER), to city councils and regional partnerships (e.g. Northern Forest Partnership), to global networks (e.g. Incredible Edible). This **multi-scalar range of organisations**, evidenced in the stakeholders present at the workshop, has substantial implications for the governance of the issue (Policy and Governance pg. 5). Subsequently, workshop participants identified a need for policy-making that stretches from the “catchment to the street-level”, and even to individual households.

Small-scale, individual action

Despite bold visions for a multi-scalar approach to the governance of GI, that embraced catchments, city regions and neighbourhoods, workshop participants acknowledged that current vision within GI policymaking was substantially less developed. The complex realities of a multi-scalar governance approach given the fragmented landownership across a catchment were acknowledged. There was also recognition that organisations were **less strategic and more ad-hoc** in implementing GI projects, and that funding was similarly piecemeal. Within the consultancy sector there was a general sentiment that it is largely the responsibility of individual actors to take GI forward in specific locations. However, looking to the future the ideas and visions for GI landscapes could provide a rallying point and catalyst for sustained action.



Community and the public realm

Who is GI for?

During the workshop some of the discussions centred around *who GI is for?* In a selection of the presentations, the focus was upon the commercial sector and place-making (e.g. Arup). In other presentations the local community was central to the need for GI, for example, Incredible Edible was described as a “movement for everyone”. Elsewhere the focus was upon the benefits of GI for specific demographics. For example, the GHIA project evidences how access to health and wellbeing benefits is not shared equally amongst the population, particularly in urban areas, with a specific focus upon the experience of people aged 65 and over. It was also recognised that GI and BI projects can foster social cohesion, with an example of a river restoration project bringing two relatively diverse communities together from either side of a river. Depending upon the project, GI and its importance to communities and the public realm was mobilised for different reasons, be that to encourage investment or engagement.

Engaging meaningfully with communities

Several stakeholders discussed how different initiatives and projects could meaningfully engage with communities that they hope will benefit from interventions. For example, the Urban GreenUP and GrowGreen projects both actively seek to involve local communities with a diverse range of interests. Meanwhile, the LOOPER project involves citizens in the co-designing of students as part of its Urban Living Labs project in Brunswick, Manchester. A mixture of online and offline engagement strategies were used and citizens were encouraged to engage in the entire process of reflection, action and learning. During the GHIA project, older people are also included as co-producers of the research.

There was some discussion during the workshop about the types of narratives and stories that can mobilise communities around a specific issue. Pam Warhurst from Incredible Edible emphasised the potential for food to unify a community and generate conversations and action at the grass roots level. Narratives around the regeneration of an area also provide a focus for wider discussions about future changes and the visions of the community (e.g. LOOPER). These conversations can in turn challenge what we understand as the public realm.

Finally, there were discussions about how communities can be involved in the valuation of GI itself. For example, concerning the most appropriate tool for valuation there was a feeling that such tools need to be able to be used by non-specialist audiences (→ Value, Page 10).

GI Showcase: Urban greenspaces, physical activity and wellbeing

Jack Benton is a PhD Researcher in the Division of Psychology and Mental Health at **The University of Manchester**, funded by the **ESRC** and working in partnership with **Manchester City Council**. His research explores the impact of urban green spaces on physical activity and wellbeing, with a focus on using rigorous natural experimental evaluation methodology. He is collaborating with developers such as **Peel Land & Property Group** and **Southway Housing Trust** to evaluate 'real world' changes in urban green space. Jack has developed a newly validated tool for systematically observing physical activity and other behavioural indicators of wellbeing in small urban green spaces such as pocket parks, tree-lined streets and green corridors along waterways. The research will also develop better theoretical understanding around what types and features of urban green space produce increases in physical activity and wellbeing; with the aim of informing practitioners and policymakers about how to optimally design, build and improve urban green spaces to maximise the potential health and wellbeing benefits.

GI Showcase: GI to Promote Health and Wellbeing in an Ageing Population

Green infrastructure can directly and indirectly influence health and wellbeing. However, access to health and wellbeing benefits is not shared equally amongst the population, particularly in urban areas. People aged 65 and over are most likely to suffer from poor health, yet this group may be the least likely to benefit from green and blue spaces. Through the GHIA project, researchers from **The University of Manchester** with a range of academic specialisms work with project partners from Greater Manchester to investigate the value of urban green and blue spaces in connection with the health and wellbeing of older people. The project aims to understand the benefits and values of urban green and blue spaces for older people and how green and blue spaces' attributes, interventions and specific greening projects can be best used to support healthy ageing in urban areas. This includes consideration of how green and blue spaces can be designed, enhanced, managed and promoted to support its use as part of preventative and restorative therapies and other health and wellbeing related activities. Older people are involved as co-producers of the research to better understand thoughts, experiences and values that are associated with green and blue spaces.



Value

Multi-functional GI

GI is multi-functional, and subsequently there are a range of ways in which it can be valued. Various perceptions of value were discussed during the workshop ranging from the economic and investment case for GI, the social value that investment in GI can generate the benefits for health and wellbeing, and the environmental value.

In many cases however, **the economic value of GI was the primary focus**. Several stakeholders felt that the economic narrative was the main mechanism for convincing the Government about the value of GI. There was some consensus that the realisation of GI projects tended to be “all about the money”. For example, the Northern Forest, an initiative to plant 50 million trees across England, assigns a monetary value to each tree to demonstrate the value of the initiative.

Subsequently, at present there is a **substantial gap relating to the social value** of GI, including benefits for physical and mental health, and wellbeing. A need to involve social scientists in research about the value of GI was highlighted, recognising that “sensors and surveys” were insufficient to capture and communicate the multi-functional benefits of GI. For example, the GI-Val project chooses to reference case studies or important research where there appears to be a link between GI and economic, social or environmental benefit, but where the scientific basis for quantification or monetisation is not yet sufficiently robust.

GI valuation toolkits: Reaching a consensus

Participants at the workshop recognised a **proliferation of toolkits** that seek to assign values to GI in different ways. One example of a GI valuation toolkit GI-Val was presented during the workshop by The Mersey Forest. The GI-Val toolkit calculates a financial value based upon a range of GI benefits including: climate change adaptation, flood alleviation and management, quality of place, health and wellbeing, biodiversity, productivity, land value, economic growth, and tourism. Discussion centred around the GI-Val toolkit highlighted the difficulty of assigning a monetary value to GI that can account for its multifunctionality. One example of a GI function that is especially difficult to assign a monetary value to was health and wellbeing, including problems associated with valuing one person’s health relative to another.

Whilst discussing the merits of valuation tools, the workshop stakeholders also recognised issues associated with the Government’s **reluctance to endorse a single tool as an industry-standard** for the valuation of GI. The value of open and ongoing debate about valuation of GI was recognised by the group, given the need for tools that can be used by non-industry specialists, the competing demands and priorities of different stakeholders and the significant caveats of existing valuation tools. However, there were also **calls for consensus on value** from the stakeholders. This included the need for an industry-standard in GI valuation. Consensus about a valuation tool would help in efforts to mainstream GI (→ Mainstreaming GI, Page 12).

Communicating the value of GI

In many cases however, the success of GI schemes hinged not just upon the appropriate valuation tool but upon **the communication of the value of GI**. The successful communication of the value of GI was identified as one of the most significant barriers to the implementation of GI in urban areas. For example, in relation to daylighting a general perception of the financial value of rivers being insufficient to merit undertaking regeneration projects was recognised. This feeling was echoed in relation to several of the projects. Manchester City Council discussed how, for local government, academic alliances can be beneficial to help tell the story of GI and communicate its value.

GI Showcase: GI-Val

GI-Val is **The Mersey Forest's** green infrastructure valuation toolkit. The toolkit provides a set of calculator tools, to help assess an existing green asset or proposed green investment. They are organised under eleven key benefits of green infrastructure (see image below). The toolkit looks at how the range of green infrastructure benefits derived from an asset or investment can be shown in monetary terms (an economic valuation where possible), quantitatively (with reference to jobs, hectares of land, visitors etc.) and qualitatively (referencing case studies). The toolkit uses standard valuation techniques to assess the potential benefits provided by green infrastructure within a defined project area. These benefits are assessed in terms of the functions that the green infrastructure may perform, support or encourage, depending upon the type of project. Once data is entered, it generates financial values for many of the green infrastructure benefits. The toolkit identifies the marginal benefit, the additional value of the green infrastructure. The current prototype can be downloaded from www.merseyforest.org.uk/gi-val.





Mainstreaming GI

From pilot projects to established policy frameworks

GI is a high-performing infrastructure with substantial benefits across a variety of sectors. Whilst this was evidenced during the workshop by the diversity of projects and stakeholders represented, there is a need to upscale and mainstream GI from “labs” and “pilots” to an established part of policy frameworks. Despite the increasingly robust evidence base, there was a general consensus that there had been limited success to date in embedding GI in policy frameworks so that it is a routine part of decision-making.

As evidenced by the variety of stakeholders at the workshop, GI is moving into the mainstream. This was a sentiment that was shared by the workshop participants. Some were surprised by how GI came to the fore even in projects that focused upon Urban Living Labs more widely (e.g. LOOPER). However, to date the Government has been slow on the uptake.

Several suggestions were made to facilitate the mainstreaming of GI. Firstly, mainstreaming of GI is dependent upon the effective communication of its value (→ Value, Page 10). There was recognition that GI is often thought of as decoration, despite being a high-performing. In response, stakeholders at the workshop could raise awareness of the multifunctional benefits of GI to increase visibility amongst policy-makers. They could also seek to influence policy-making by providing a robust evidence base of the benefits of GI.

The importance of learning and co-design was also emphasised in several projects. For example, discussion of “Learning Loops” as part of LOOPER, demonstrated the merits of involving citizens, stakeholders and policy-makers in co-designing solutions through a process of “action-reflection-action-reflection”, in combination with technology. Several of the projects (GrowGreen and UrbanGreenUP) also involved follower cities in which GI interventions would be replicated. There was also a suggestion about the creation of a “Toolbox of Interventions” that would bring together best practice from across a range of projects. This would provide a route map and guidance for future GI interventions and policy-making.

GI Showcase: LOOPER Learning Loops in the Public Realm

Urban problems such as traffic congestion, safety and pollution are difficult to tackle as the mitigation involves multiple stakeholders. The aim of LOOPER, a project led by **The University of Manchester** is to develop new ways of decision-making that bring together citizens, stakeholders and policy-makers by building a participatory co-creation methodology and platform that demonstrate ‘learning loops’. LOOPER’s methodology addresses the whole co-creation process. Citizens and stakeholders debate topical issues, then frame the problem and collect data. The LOOPER platform visualizes the data, and enables the co-design of solutions which are evaluated and the best are put into practice and monitored.

GI Showcase: GrowGreen

GrowGreen aims to create climate and water resilient, healthy and livable cities by investing in nature-based solutions (NBS). Making nature part of the urban living environment improves quality of life for all citizens and will help business to prosper. High quality green spaces and waterways provide innovative and inspiring solutions to major urban challenges, such as flooding, heat stress, drought, poor air quality and unemployment and will help biodiversity to flourish.

By embedding NBS in long term city planning, development and management, accessible green and blue spaces are a permanent feature of all urban areas around the world, creating harmony between people, economy and the environment, for the benefit of all.

Through NBS demonstration projects and partnerships with a group of cities across Europe and China, Grow Green will develop a replicable approach to the development and implementation of NBS strategies at city level. A further six cities will be supported in using this approach to produce their own NBS strategies.

Informed by these experiences, Grow Green will support the creation of the conditions needed for implementation of city NBS strategies globally. This will be done by building awareness and capacity, supporting the development of appropriate policy frameworks at a range of levels, developing viable business models for investment in NBS, and supporting the development of the global market for NBS products and services.

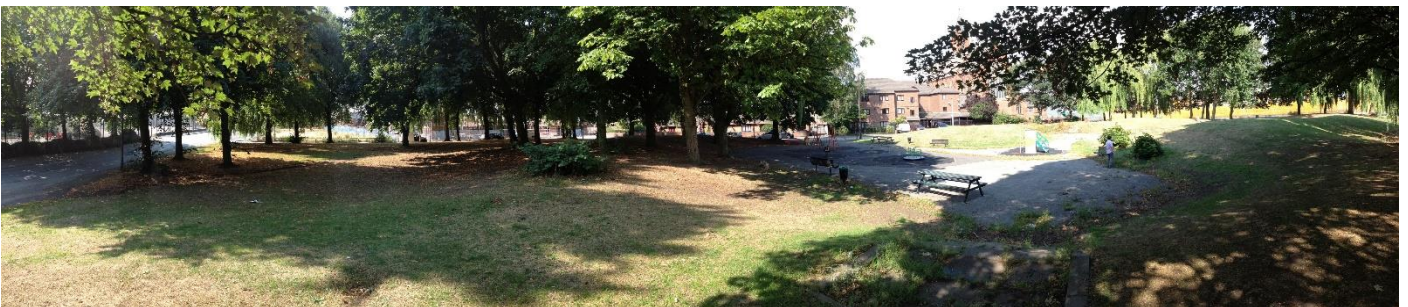


Image: GrowGreen site in West Gorton, Manchester.

GI Showcase: Urban GreenUP

URBAN GreenUP is a multi-city project that aims to investigate the value of investing in Nature-Based Solutions (NBS) in urban areas. Coordinated by three front-runner cities: Liverpool, Izmir in Turkey and Valladolid in Spain, the project is using NBS demonstration interventions that include sustainable drainage, vertical and floating walls and gardens, nature-based housing improvements, and others to address issues of climate resilience, economic growth, and socio-cultural understandings of nature in urban areas. The results will be applied to a series of follow-on cities in Europe and Columbia, China, and Vietnam to assess the global benefit of NBS. **Liverpool City Council, The Mersey Forest and The University of Liverpool** form the partners in the front-runner city of Liverpool.



Image: Proposed NBS in Liverpool

Image: Pop-up forest in the city centre of Liverpool, part of the Urban GreenUP project.



Next steps

For the workshop participants the GI Showcase event was “all part of mainstreaming a different way of doing things, through partnership working”. The participants agreed that the workshop provided an important forum to share best practices relating to GI facilitating and generate an inter-disciplinary dialogue between a range of actors across the North West of England. Reflecting on how the GI agenda could be moved forward, stakeholders recognised a need to “make it normal not just good practice”. They agreed that by providing evidence of the value of GI (→ Value, Page 10), by implementing GI through working in partnership (→ Interdisciplinary Partnerships, Page 5) and across multiple scales of governance (→ Scale, Page 7), GI could be further mainstreamed in cities across the North West.