GREEN INFRASTRUCTURE DESIGN FOR LIVEABLE CITIES

Georgia Vitale
ARUP

ARUP CITIES ALIVE

Summary

1. Driven by the need to create more liveable communities and sustainable development, governments are rethinking the very structure and function of their cities. At the heart of this movement is a focus on creating more sustainable urban communities and healthier places. A way forward is to rethink the design process and redefine the functions and vital role that walkability and urban greening can play in achieving this goal.

2. Cities Alive takes a human-centred approach to rethinking how we should design and manage cities in the future. It provides an integrated focus on the experience of cities and the global challenges that are impacting the lives of everyday citizens. We recognise the importance of a city's inhabitants and we explore the relationships between design, processes, spaces and people. Cities Alive is an invitation to collaboratively shape our urban future.

3. A liveable city is one that provides for the wellbeing of its communities. It provides affordable and diverse housing and has a movement network that is underpinned by public and active transport, provides access to high quality employment, education, social infrastructure and other facilities that support daily needs1 – a city of short distances2.

4. A GI-led design approach aims to create a network of healthy and attractive new and upgraded city environments, sustainable routes and spaces. The approach would build on, strengthen and link existing GI components I've just described. Over time this resilient and networked "city ecosystem" will be capable of generating a substantial range of social, environmental and economic benefits for urban citizens, whilst also providing protection against the effects of climate change. A key component is also the promotion of multifunctional design (where a range of benefits are provided in one area through careful planning, integrated design and management) to deliver an array of substantial social, environmental and economic benefits.

5. Vision

All delivery should be underpinned by and contribute to a large-scale strategic vision. This vision should identify the assets, opportunities, risks and vulnerabilities for a given context.

This vision should:

- Be driven by what is required in that particular city and context rather than by arbitrary standards,
- Consider what should be delivered where, and how the needs of different users and delivery agencies can be satisfied spatially,
- Set priorities and achieve an optimal balance of complementary functions,
- Be a core planning policy requirement and integrated into all planning policy themes, rather than a separate initiative or strategy,
- Contribute to housing, transport, employment, climate change and other policies,
- Address the needs of a range of stakeholders who have contributed to its development,
- Be clear how different interests can benefit and play a role in delivery, and
- Set an appropriate scale, considering the network of existing and future assets.

6. Collaboration

Increasingly, GI is being seen as a concept which unites a range of disciplines and interests, and that facilitates collaborative working. Crucially, in the context of green infrastructure, competing priorities can often complement each other.

- Strengths, priorities, opportunities, and requirements of different actors must be considered in order to acknowledge the political nature of delivery, in particular across local boundaries.
- Local authorities, developers, clients, landowners, utility providers, the community and built environment professionals should communicate, share knowledge and educate others in the benefits of GI.
- All actors should contribute to the vision for GI, with the aim of identifying interventions that are able to adapt to changing contexts and the needs of the different actors involved.
- Planners should always negotiate, allowing new opportunities to be delivered as they emerge. Crucial to any negotiation is the ability to promote the case for GI to those responsible for delivery in a way that is appropriate to their needs.

7. Evidence

Preparation of a GI framework should be underpinned by evidence. The aim is to ensure that interventions are appropriate to their context. Evidence is particularly important to understand the value of a city's natural resources to enable future planning for enhancement potential.

- Existing studies and local information should be used, including relevant planning policy evidence.
- Evidence should identify what functions and connections are needed, and where to strike an effective balance in the delivery of the network.
- Data relating to GI should be collected and shared to inform future projects, including surveys of existing assets, new connections and functions, assessment of the quality, and what other functions could be integrated.
- Variables of interest to the quality of the external environment, eg, air temperature, surface temperature, air pollution and levels of comfort, should be monitored. Monitoring can be carried out over time to gauge the progress of improvements to the urban environment.
- The use of GIS should be considered as an increasingly effective tool to identify spatial priorities for an area and to understand and respond to a range of issues such as heat risk, flood risk and development pressures.
- GIS should act as a tool to monitor assets and track the implementation of the vision.

8. Tools

Planning plays a vital role in the delivery of projects, and will be triggered in many interventions involving new and existing development. Mechanisms which should be considered include the following:

- GI should be a core requirement for local authorities, including a clear strategic vision and policy considerations that are integrated throughout spatial objectives and planning themes.
- Developer obligations should include mechanisms that contribute directly to the delivery of the overarching vision. Planning agreements could also secure long term funding for the management of projects.
- Mitigation should be linked to delivering the strategic vision and locked in through the use of planning conditions.
- Where a strong GI framework exists, it is possible for planners to respond to opportunities as they arise both with new development and redevelopment projects, and with building refurbishments. A robust evidence base will be key to securing effective contributions to the vision.

9. Management

Management and maintenance of GI should always be a key consideration from the outset of a project. This is crucial for the longevity of a project and for securing the full potential of interventions.

- Clear responsibilities for maintenance and management should be set to ensure their effective operation and durability.
- For smaller developments or infrastructure projects, it is important to avoid "leftover" spaces that do not have clearly defined management responsibilities. While local authorities might once have taken over this management role, there are now other models, as described in the following section.

10. Funding

Traditionally, local authorities provided funding for the delivery and management and coordination of GI. Increasingly this type of funding is more difficult to secure, leading to new, creative and innovative ways for funding and use of available resources.

Here, considering funding for maintenance and management from the outset will help deliver long term benefits. Cost reduction and recognition of the value of existing assets are also important. Examples include the following:

- Local social enterprises set up by residents and local bodies to provide long-term management — bolstering social capital can be a powerful funding mechanism. Potential for further benefits should be considered such as training and education opportunities, school involvement, apprenticeships — and building community cohesion.
- Involving the voluntary sector this sector could apply for funding, where other actors are not eligible.
- Funding and delivery by third-party organisations — that can implement new ways of maintaining open space and identify appropriate solutions dependent on the approach needed for a particular project. Risks and liabilities associated with projects can also be better managed, something that community groups may be concerned about when delivering projects.
- Self-funded initiatives that can pay for themselves — This could include temporary interventions such as local festivals or events, food production, energy production, childcare facilities or commercial use of a development.

11. Importance of city leadership

Throughout all of these recommendations, demonstrating the value of GI and the variety of scales and types of interventions possible is crucial. Political champions will be important in setting and promoting a vision whereby GI adds to the quality of a city and differentiates its offer by attracting investment. Professionals negotiating to achieve new or improved assets should understand the economic context in which they are working and promote the multiple benefits of green infrastructure to applicants.

Designers working in multidisciplinary teams should seek to ensure that GI and its subsequent maintenance are integral to individual projects, and always linked into the wider vision and framework for that city.