EQUITABLE URBAN FORESTRY

COMMUNITY-LED, DIGITALLY ENABLED

As part of the National Trust's Urban Forest Accelerator, TreesAI has been tasked with cataloguing best practices, making framework recommendations, and providing a database to assist local authorities and project developers in the long-term implementation of data-enabled urban forests, which prioritise often-marginalised communities. It aims to capture insights into the challenges and facilitating conditions encountered when placing communities at the forefront of urban forest decision-making processes.

This report serves as a catalyst for urban forestry stakeholders, particularly those seeking innovative approaches. We anticipate its readership to include local authorities, especially strategic decision-makers and delivery teams focused on enhancing the sustainability of our cities; numerous environmental NGOs and community groups dedicated to integrating nature into urban environments; as well as national sponsors, advocates, and supporters of urban greening initiatives who play pivotal roles in providing resources and governance frameworks to promote equitable expansion of green spaces in our cities, ranging from national government to philanthropic organisations.

This report has been authored by Carlotta Conte, Chloe Treger and Thomas Theodore - with significant input from David Coughlin and Emily Cooke. It is the result of numerous invaluable conversations with experts and seasoned practitioners over the years. We would like to extend a special thank you to those who generously shared their time during the research phase through one-on-one interviews: Anne Jaluzot, Chris Avent, Conor Nugent, Gianluca Rapaccini, Jim C. Smith, Katy Hawkins, Mark Dixon, Paul Wood, Rithikha Rajamohan, Simon Needle, Suzanne Simmons, Toby Pillatt and Tom Broadhead.

FORESTS ARE VITAL, VALUABLE URBAN ASSETS. THEIR ESTABLISHMENT, MAINTENANCE AND SURVIVAL WILL HELP TO CREATE CLIMATE-RESILIENT CITIES.

Equitable Urban Forestry has been created to support the decisions and design processes foundational to the establishment, maintenance and survival of urban forests.

The success of an urban forestry programme depends on the people who make and implement decisions - ensuring communities are part of that group of people is essential. Data and technologies can be helpful when engaging the community across an urban forest's lifecycle; increasing the resilience of both the local community and nature itself.

However, harnessing and implementing technologies can create unintended consequences or tradeoffs, so it's important that you're able to establish where data is useful and where it might just alienate, overwhelm and soak up resources.

We've plotted a roadmap, highlighting the factors which will likely influence the outcomes of your urban forestry.

Across the three main phases of the roadmap (Analysing, Planning and Implementing) we have included factors related to **approaches and interventions** that will help to place local communities at the centre of decision-making processes and **digital tools, software and infrastructures** that will help support, monitor and administer your project, enabling you - and other stakeholders - to make and implement informed, data-driven decisions.

No two cities, communities or urban forests are ever the same, but we've highlighted some relevant **tools and case studies** which might prove helpful on your journey. You can also explore our online case study table for more detail.

While exploring the following pages, remain mindful that digital tools only ever provide assistance, and are never perfect substitutes for high-quality human interactions. In order to avoid the erosion of democratic principles and the alienation of citizens, you'll need to strike a balance between digital engagement and participatory practices.

This roadmap presents a sequence, but in reality, its phases will overlap, intertwine and ultimately unfold in a less linear fashion. In the final section Beyond The Roadmap we've looked at some of the possible gaps and challenges that require addressing in the UK.

Good luck establishing and maintaining trees.

PROLOGUE: MEANINGFUL DATA

Before diving into the Equitable Urban Forestry Roadmap, this spread considers some cautionary tales of implementing data and digitally enabled approaches.

EVERY COUNCIL HAS ACCESS TO DATA SOURCES, RANGING FROM QUANTITATIVE METRICS TO RICH COMMUNITY STORIES

But before we can use this data to begin making decisions, it's important to establish the values and priorities that matter to various communities and institutional partners. These local stakeholders play key roles in the success of infrastructural projects, but meaningful relationships and equitability will only ever be established over time, and built via consistent involvement in decision-making processes. To create a clear picture when utilising data, it's important to ask a series of questions .

Why are you collecting data? What are your assumptions?

What data are you collecting? At what scale?

How are you collecting it? Whose consent do you need to collect/ use it?

WHEN PRESENTED AS RAW, UNPROCESSED FACTS, SYMBOLS OR CHARACTERS, DATA IS MEANINGLESS

So think about how data could be combined: pedestrian counts, LiDAR images to understand individual tree's shading, and community love letters can together create a meaningful picture that can be used to make informed decisions.

Presenting relevant data and information can help individuals better understand the value and benefits of urban forests, leading to increased engagement and support for green spaces. The pioneering work to create Tree Equity Score UK is a huge step in the right direction, but could we go even further and **develop equity through processes** rather than treating equity as a spatial concept to be factored into prioritisation.

Tree Equity scores are built on resident demographics, but what about cosnidering pedestrian-oriented planning, which looks at how to enhance the street tree planning based on pedestrian volume, or considering how the community sets their own objectives?

DATA BECOMES VALUABLE WHEN IT'S PART OF USER-FRIENDLY PROCESSES.

We each bring assumptions and ambitions to place-making, and while there are a variety of tools designed to play a supporting role, their relative success is dependent on a collective understanding of these assumptions and ambitions.

For a list see Cities 4 Forests 32 tools here

Initially, visioning processes can help to establish community needs and priorities, and tackle pre-existing trust-based issues. Provided these processes are grounded in language and concepts that resonates with people, they can enable further, higher quality communication, allowing groups to find shared meaning and perform accurate evaluation as the work progresses.

Cornerstone Indicators combine statistical analysis with participatory workshops to co-design intuitively understandable indicators that encapsulate what thriving means to communities.

CHALLENGES FROM CURRENT PRACTICE

RECOMMENDATIONS FOR FUTURE PRACTICE
(and examples)

DATA CHALLENGES

Lack of granular data:
Over simplification leads to unhelpful, over-aggregated insights

☑ Data collection strategies should consider a multiplicity of sources and typologies
- Text-a-tree Halifax

Lack of accesible data
leads to ineffective processes, or resource intensive data collection strategies

☑ As far as possible, high-quality data, should be made publicly available
- TreeTalk

Inter-un-operability:
Poor integration with relevant systems leads to obsolescence

☑ Resources and tools must be compatible with existing systems.
- Green Minds Plymouth

ENGAGEMENT CHALLENGES

One-way relationships:
Municipalities dictate rather than collaborate with citizens further weakening trust

☑ Use engagement to build institutional and community capacity and, when possible give citizens control
- Participatory Asset Mapping

Digital divide:
Marginalised groups with limited access are excluded, further exacerbating social disparities

☑ Make sure the processes are legible, engaging, and user-friendly to a multiplicty of citizens
- ARLA's Living Infrastructure

Preaching to the converted:
Those who are not interested in urban forestry are excluded, creating an echo chamber

☑ Look to create processes with short-term incentives from which participants can gain tangible benefits

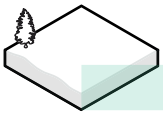
- Oakbay Coolkit

OVERVIEW

A ROADMAP FOR URBAN FORESTRY: ANALYSING, PLANNING AND IMPLEMENTING

On this double spread, you will find an overview of the three phases of the roadmap. It has been developed to support municipalities in understanding what technology to deploy when to support different types of public participation - across the spectrum shown in the table below, adapted from the IAP2's Spectrum of Public Participation.

GOAL	PROMISE
INFORM	
Provide the public with balanced and objective information to assist them in understanding the problem, alternatives, opportunities and/or solutions.	*We will keep you informed.*
CONSULT	
Obtain public feedback on analysis, alternatives and/or decisions.	*We will keep you informed, listen to and acknowledge concerns and aspirations, and provide feedback on how public input influenced the decision.*
INVOLVE	
Work directly with the public throughout the process to ensure that public concerns and aspirations are consistently understood and considered.	*We will work with you to ensure that your concerns and aspirations are directly reflected in the alternatives developed and provide feedback on how public input influenced the decision.*
COLLABORATE	
Partner with the public in each aspect of the decision including the development of alternatives and the identification of the preferred solution.	*We will look to you for advice and innovation in formulating solutions and incorporate your advice and recommendations into the decisions to the maximum extent possible.*
EMPOWER	
Place final decision making in the hands of the public.	*We will implement what you decide.*



ANALYSING

Laying the foundation

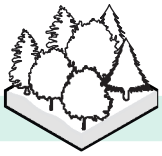
This phase involves data collection and processing to support informed site selection. Foundational capacity-building actions include enhancing governance, developing resource mobilisation plans, and employing data collection strategies for insights. The output of this phase is a project brief that acts as the blueprint for subsequent stages.

It is best to get communities involved as early as possible by consulting and involving community groups through citizen surveying and storytelling. However, be aware of data collection which create further separation between data collector and respondents. Ideally this would be part of a wider process where respondents are kept in the loop with how their data has been used, being invited into the sense-making process along the way.

Ideally, the process should go further along the public participation spectrum - collaborating and empowering communities by running co-visioning processes.

Enabling tech

- Citizen Engagement: Utilising citizen surveying, storytelling, and citizen science methods encourages active community involvement and gathers valuable insights.
- Remote Sensing: Employing remote sensing technologies offers detailed environmental and spatial data, enhancing the accuracy of analyses.
- Risk and Decision-Making Tools: Incorporating risk-based vulnerability assessments, multiple criteria decision-making processes and gap analyses helps in identifying potential challenges and guiding strategic decisions.



PLANNING

Concept and Technical Design

This phase begins with conceptualising the design and spatial coordination, including application preparation, initial cost estimation, and alignment with spatial realities. The subsequent technical design phase focuses on precise species selection and procurement strategies that support the business case.

At this phase, community engagement should steer towards collaboration and empowerment as much as possible, and all groups should be kept informed of opportunities to be involved.

Ideally, strategies will aim to build community wealth in a just fashion, which could include renumerating communities or training them, alongside active involvement through co-design processes that allow for collaborative refinement of the project.

Enabling Tech:

Co-design Tools: Technologies such as Generative AI-enabled visualisations (e.g., UrbanistAI) and Augmented Reality (AR) applications (e.g., Wild Streets) can vividly bring project concepts to life, enhancing stakeholder engagement. The power of these visualsation tools is unlocked when embedded in a discursive co-design tool.

E-Participation: Utilising online town halls and decision-making platforms encourages broader community participation and transparent dialogue.

Digital Twins and Scenario Testing: Digital twins offer a dynamic modelling approach to urban forestry, enabling detailed scenario testing and informed decision-making.

IMPLEMENTING

Establishing, Maintenance and Management

Success during this phase hinges on forming enduring, place-based partnerships and governance structures that can support various mechanisms that underpin long-term sustainability (financing, regulatory, standardisation, etc.)

This phase should empower communities to take an active role through community planting events, alongside maintenance and co-management contracts.

Enabling Tech:

Asset management software: Data repositories and interfaces that can be used by different stakeholders to co-ordinate management transparently and effectively.

Sensing: Remote-sensing technologies (LiDAR and satellite imagery) alongside community-based monitoring approaches, offer innovative ways to assess and manage urban forests accurately

Artificial intelligence (AI) assistance: In terms of ecosystem service prediction or maintenance scheduling can help to streamline resource allocation and promote active stewardship by optimising tasks and predicting future maintenance needs.

ANALYSING (1/2)

SETTING THE DIRECTION

Developing a strategic framework that considers community needs, urban development, and ecological balance helps form a Project Brief; the blueprint for subsequent stages and kick-starts your own story.

It's important to establish the values and priorities that matter to various stakeholders to determine the project's objectives. Data can support in reaching and realising these objectives. Metrics can be used to facilitate data-driven decision-making, process and impact assessment, and ultimately, evidence-based policy-making with appropriate feedback loops.

However, the metrics we choose not only measure what we manage but also define what we end up managing, influencing our understanding, where we focus our attention, and shaping our aspirations.

Metrics support project and impact assessments, unlocking data-driven decision-making and, ultimately, evidence-based policy-making. Therefore, they can shine a light on hidden aspects of the system - shifting our attention and shaping aspirations.

When selecting indicators, choosing those that can build pathways to place-based flourishing beyond the urban forest is crucial. Urban forestry should be part of a more comprehensive, more inclusive approach to place-based regeneration that fosters a sense of belonging and ownership, and the language and metrics used should emphasise this.

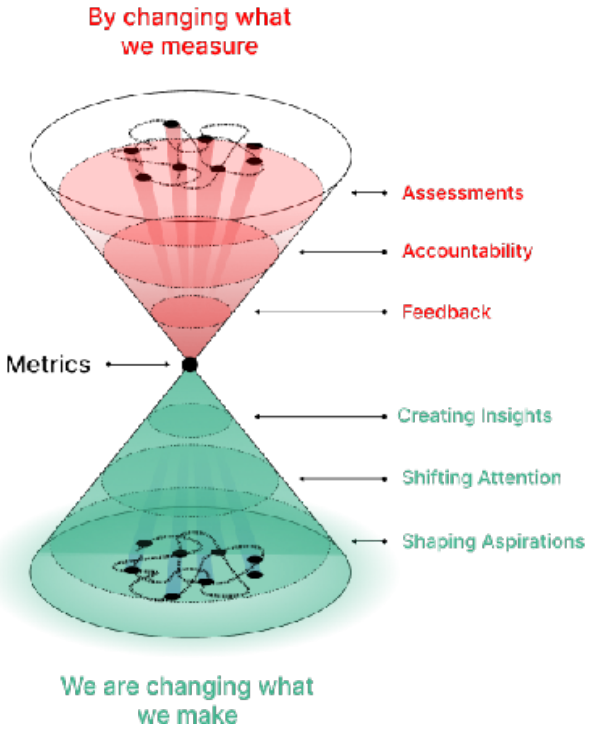
Taking a whole system approach aims to prevent the erosion of unmeasured benefits, such as a tree's capacity to be climbed by local children, in pursuit of defined objectives, such as a tree's maintenance cost

But this isn't just a case of picking what we measure, but also thinking about what stories we tell.

While data provides valuable insights, it is often insufficient to shift behaviours. With their emotive and relatable qualities, narratives play a crucial role in fostering understanding, empathy, and engagement. By weaving data into compelling narratives, for example by Participatory User Story Mapping, we can works with communities to plot futures and scenarios through narratives.

On this page, we provide some examples of ways to centre communities in the discussion and to build the required resources to deliver. and objectives.

At this point, you'll have to spend time thinking about who gets to contribute to the brief and who gets to make decisions.



CONTEXT

Centring communities, enabling participation, mobilising resources

Centring communities

According to our age, context, gender, occupation, and lived experience, we encounter urban environments differently. We need approaches that place the needs, capacities, and priorities of historically marginalised communities at the heart of urban forestry.

We have to develop engagement strategies mindful of why people participate in different ways, appreciating how language shapes perceptions and responses and a wider awareness of socio-cultural context.

Beyond language, we must understand how people's lived experiences can drive either biophilia, the innate human affinity for nature, and biophobia, the fear of it. Inclusive and welcoming urban forestry projects that cater to diverse needs can be created by recognising biophobia - for example, research indicates that women may perceive urban nature differently due to safety concerns, or immigrants respond differently to species that remind them of home.

However, needs are not static, and fostering biophilia through the engagement process can help to prompt a deeper connection between urban residents and their natural surroundings.

Ideally, you'll be able to think expansively about "community". You are acknowledging the interconnectedness of all living beings to understand the needs and preferences of birds, bees, rivers, water systems etc.

At DM, we've been working on a tech-enabled democracy that gives non-humans voices, exploring the prospect of a chat bot to support engagement with a river's health.

Developing long-term, resource mobilisation strategies

Right now, it might feel financially ambitious to plan a data-centric approach incorporating a wide plurality of local stakeholders, and at some point, you'll likely need a further budget.

However, there are a range of financing and resource mobilisation strategies that are increasingly being deployed. For example, the Greater Manchester Environment Fund brings together financing from Biodiversity Net Gain and Planning contributions to fund greening projects. Further afield, FreeTown's Tree Town provides other inspiring examples.

Remember, by taking a data-centric approach and tracking the various ecosystem services developed, you can lay the foundations for building a business case for future funding. Within these mobilisation strategies we'd advise taking a phased approach - which can cover immediate needs alongside extendin into future aspirations.

It's essential to develop a strategic framework that aims to build community wealth, centring communities' needs through an engagement process built on awareness of them. Institutional capacity in coordination, engagement and long-term resource mobilisation will be required to implement such a framework.

ANALYSING (2/2)

DATA-ENABLED PROJECT BRIEF DEVELOPMENT

Developing a fit-for-purpose data collection and processing strategy is essential in developing the strategic framework.

Trees Equity Score UK's map provides an initial resource for councils looking to identify the areas in greatest need of investment in trees. However, its data must be complemented and enhanced by interaction with communities.

Useful data for defining objectives includes:

Tree inventories e.g. existing tree canopy, species diversity, health status, and environmental impact

Feasibility analysis e.g. site constraint

Geo-located risk data e.g.flood risk maps, heat maps, air pollution maps

Institutional data e.g. community demographics

Future plans existing policies and planned developments

Environmental and community-based organisation identification see STEW-MAP which is designed to answer who, where, why and how environmental stewardship groups are caring for our cities.

Community needs, values and perspectives either through direct engagement or exploring innovation (e.g. sentiment analysis)

Always remember, it's never just about the data, but establishing how that data can help you reach goals and objectives (see the previous spread). At this point it's worth thinking through how you might visualise the data, is there an opportunity to make it tangible unlocking people's ability to understand the status quo and imagine spatial possibilities .

DATA COLLECTION

Collating information from various sources, ensuring data quality and compatibility.

Citizen science can foster a sense of ownership

It's vital that your data-based decisions and collection methods drive equity.

Make sure data points are easy to understand when developing a canopy index. For example, you might ask the community to consider whether a squirrel could jump from tree to tree rather than ask them to interpret a technical metric which requires them to walk around the forest with a measuring tape.

Plenty of digital tools are designed to support these data collection processes (see GLOBE Observer App or Spotteron) which all provide software to support data collection.

As well as urban forestry, community voices might recommend an open recreational space for exercise - hence why participatory asset mapping is a good step.

Remote sensing technologies

LiDAR (Light Detection and Ranging), drone photography and satellite imaging all provide high-resolution images of urban areas, allowing you to track changes in vegetation cover, land use, and the health of urban green spaces over time.

Tree Folio NYC uses LiDAR scans for "leaf-level" visualisation of each of New York's seven million trees. While previous approaches were able to identify broad trends and inequities, Tree Folio NYC's decision to focus on individual trees - rather than aggregate canopy cover - allows researchers to assess shade in hyper-specific areas, and more accurately allocate resources.

INITIAL PROCESSING

Extracting insights that support the project brief and allow you to begin city-wide prioritisation.

Equitable, risk-based vulnerability assessments

As well as the socio-environmental benefits of an NbS project, it's also essential to encourage people to think about the urban space holistically; to understand, define and frame the risks that the NbS could help mitigate.

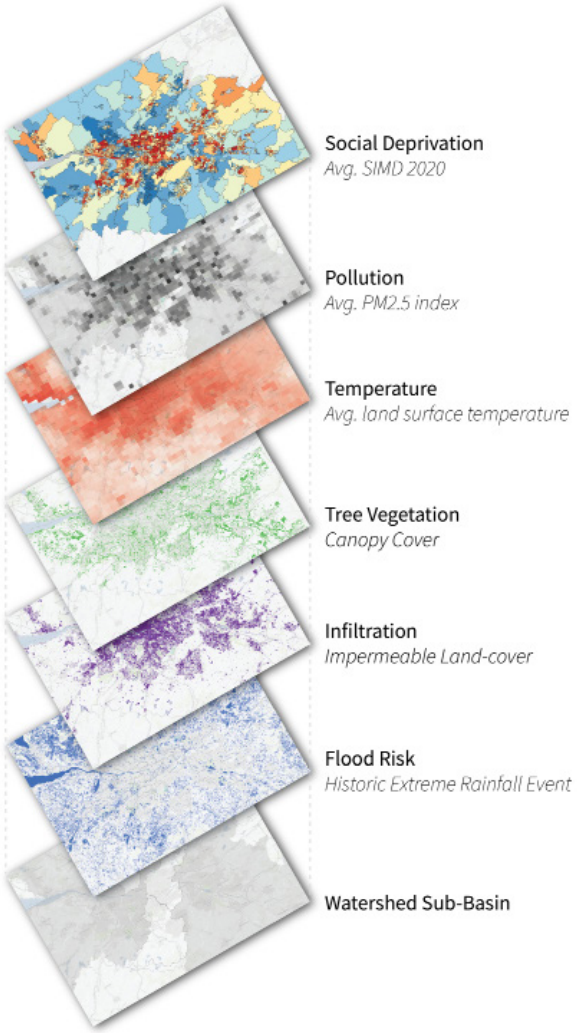
Cities face a multitude of risks, and consistent tree coverage can help reduce asthma attacks in areas with high air pollution, reduce the threat of heatwaves, and reduce stormwater runoff by supporting SuDs. Tree Equity provides initial readings, PlantitGeo has a proprietary tree-tracker, and TreesAI has a scoring metric to help facilitate location-based prioritisation.

Establishing continuous, integrable infrastructures

As you work with stakeholders to develop the project brief, set up continuous engagement plans to support feedback loops. There might be tradeoffs when weighing up data points, but navigating these transparently should help develop credibility and legitimacy.

The appropriate data infrastructure will ideally support hte integration of urban forestry analysis into wider urban planning - such as in New York (US), Marion (Australia) or increasingly in London (UK). Green Talk's platform is being used in various locations including Hounslow and Lewisham but has run into problems as contractors use three different asset management platforms, therefore always ensure that your selected software has the required interoperability.

Spatial Data Overlay for Risk Assessment



When collecting and analysing data for a project brief, various digital and engagement tools, such as remote sensing, citizen science, and participatory mapping, can provide valuable support. Given the continuous nature of urban forestry, the strategy should aim to establish an open and accessible data repository that enables easy community engagement, fostering transparency and participation throughout the process.

PLANNING

NOW YOU HAVE A PROJECT BRIEF, YOU CAN GET INTO THE DETAILS

At this stage you should have aninitial project brief.

Your project brief should include:

- Feasibility Studies and Project Constraints environmental and supply factors for tree planting and plant stock procurement
- Project outcomes and success factors
- Assessment of potential risks, budgeting, and resource allocation

Getting from a project brief and concept design towards detailed technical design should be a collaborative and iterative process.

Relevant activities include:

- Developing delivery strategies
- Recruiting relevant subcontractors
- Looking for training or reskilling options
- Developing a detailed business case and budget
- Co-developing technical designs with local communities
- Developing - and attaining - planning permission and community permission through legitimate decision-making processes.

By the end of this phase, you'll have reached decisions on tree locations and species, alongside any relevant planning for the establishment and management of the urban forest.

DESIGN CONSIDERATIONS

Mobilising resources, driving multiple impacts

Embedding opportunities for training, reskilling and jobs

Offering accessible programmes that allow people to retrain can improve the efficiency of any urban forest project, and drive community stewardship. Many benefits of urban forests are difficult to attribute or only happen when a tree hits maturity far in the future, whereas direct investment in the social infrastructure of the place - for example through job creation in Camden and Islington or Root Nashville's Planting Captains where residents are given $1000 to find homes for 50 trees in their neighbourhood.

Beyond this, there are opportunities of reimagining training as a two-way street, with the potential for professionals to learn from local communities as in the Hālau ʻŌhiʻa training course.

Moving beyond traditional cost-benefit analysis

Digital technologies can improve your ability to understand, quantify and capture benefits. While cost-benefit analysis allows you to evaluate economic gains against incurred expenses, many benefits of urban green spaces are not merely economic.

Fortunately, a variety of tools can help prioritise expenditure and monitor and justify your investments such as iTree, GI-VAL, or B£st.

AI stretches innovation even further, enabling climate data to help forecast tree growth patterns to enable better planning and anticipate maintenance requirements such as the Green Urban Scenarios or FolioNYC which both create digital twins to better predict impacts.

DETAILED CO-DESIGN

Digital interfaces novel institutions, supporting collaboration

Leverage existing capacity

Innovative urban forestry unites local government, businesses, NGOs, and communities.

We can use technologies to assist with engagement, using online portals or paper-form project proposals. However, these sometimes yield unrealistic proposals that cannot be implemented, as residents may suggest projects beyond the site constraints. Immersive, digital engagements can be powerfully compelling, but they creating further distance between authorities and communities - as they often do not lead to actionable insights and risk creating one-way, dictatorial communications rather than empowering communities through meaningful dialogue. .

Wild Streets allows users to easily create - photorealistic 3D trees, plants and street furniture, and then share their creations with others.

Therefore as well as digital tools, innovative urban forest partnerships must be built on deep relationship building - see a toolkit on engagement in urban forestry with examples ranging from visioning workshops to participatory budgeting.

Collaborations between place-based community groups, urban forestry experts, local authorities and local residents and workers can help to blend expertise, funding, and technology - for example with Civic Square in Birmingham or Gowanus Justice Coalition.

FINAL DECISION MAKING

Extracting insights, beginning city-wide prioritisation

Offline engagement

Community engagement is vital at this stage, but it can be difficult to reach a consensus when clear trade-offs exist. Non-digital processes such as citizen assemblies, which bring together randomly selected community members to deliberate and make informed decisions on policy issues, can prove invaluable. See Climate Assembly UK or Ireland's Citizens Assembly on Biodiversity Loss.

A further innovation would be a "more-than-human citizen assembly", incorporating non-humans by representing future generations or natural systems.

Online engagement

Digital tools can offer assistance, but overreliance on digital tools can exacerbate existing inequalities by excluding marginalised groups with limited digital access. The best digital tools can function in tandem with inclusive, participatory practices. For example, POL.IS is an open-source platform that fosters online discussions in a gamified manner to find common ground between diverse opinions instead of surfacing divisions between citizens.

At the planning stage, focusing on collaborative and empowering digital tools which aim for community wealth building includes Generative AI-enabled visualisations (e.g. UrbanistAI) and AR (e.g. Wild Streets; simulation and scenario analysis tools that unlock dynamic cost-benefit analysis (such as digital twins or GIS based valuations) and consensus finding & decision-making tools such as online citizen assemblies.

IMPLEMENTING

PUTTING YOUR STRATEGY INTO ACTION

Cities often have long histories of working with community groups on planting days, establishing tree keepers and tree warden schemes. In 2022/23, the Mayor of London gifted 40,000 trees to Londoners through free tree planter packs as part of the I Dig Trees project.

Digital infrastructure, such as asset management software, can provide relevant support throughout a tree's life-time.

As trees reach maturity, they also reach their peak in terms of environmental benefits.

Mature trees provide increased shade, effectively reducing urban heat islands; they improve air quality by absorbing pollutants and offer a stable habitat for a wide range of wildlife. While this is well known within urban forestry, it is often lesser known in communities.

As we steward our trees into maturity, we need to shift focus from planting towards long-term maintenance to ensure the long-term health of our urban forests.

Alongside the obvious environmental benefits, research by Forest UK has shown that two of the main reasons communities disprove of urban trees are (1) historic lack of maintenance and (2) historic lack of consultation. Clearly, establishing processes for ensuring trees are well maintained is therefore critical to the acceptance of the urban forest.

MONITORING

More than just supporting maintenance

⚙ For survival, equity and engagement

Monitoring helps to ensure long-term survival by detecting diseases, pest infestations, nutrient deficiencies, and environmental stresses at an early stage. Arborists traditionally rely upon observational assessments such as leaf colour, size and density, but digital sensors like E-plant increasingly complement their work.

Monitoring does more than simply support maintenance; measuring changes in pollution, stormwater runoff, or air temperature helps to demonstrate the benefits of various ecosystem functions and supports the business case for further investment.

When developing a monitoring strategy, it's important to consider both the metrics that are being monitored and whether they are being monitored in ways that drive equity and engagement.

Monitoring also provides opportunities to engage citizens. In Scotland, The Urban Releaf Project is delivering a two-year citizen-sensing pilot - monitoring a range of environmental issues that affect Dundee's green transitions for the built environment. Or Cityzens4CleanAir tapped into the transformative power of decentralised data by getting young citizen scientists to wear low-cost air quality sensors to generate evidence for decision makers.

MANAGEMENT AND MAINTENANCE

Providing opportunities for community involvement

Digital platforms and AI assistance achieves improved longevity

AI can be used alongside remote sensing to identify and prioritise locations where maintenance is required, to ensure efficient scheduling, to raise awareness regarding urban tree care and the importance of watering trees.

Baumblick AI. determines the adequate water supply for individual trees by employing sensors to measure soil moisture tension, indicating the soil's condition. By employing an AI model to analyse this data, patterns are identified and used to forecast the present and future water availability for all urban trees with a lead time of up to 14 days.

However, effective management extends beyond efficient watering and provides opportunities for community involvement. NYC's Bloomberg Map provides an interface for citizens. As well as watering information, communities can learn about their urban forest, get notified about new plantings and register complaints. Greentalk's Tree Talk is a similar holistic platform currently being developed for London. One step further than this, Free Town is using the Tree Tracker platform to pay citizens (through community groups) to plant and monitor trees and mangroves.

Stewardship from life to death.

Success is never just about digital tools, of more importance is the right management and governance in place to ensure the long-term survival – community stewardship has been proven to improve the survival rates of trees.

The Arbor Day foundation has developed resources, such as Tree Board University online training program to assist in the formation and running of tree boards. As opposed to one-off decision-making engagements, tree boards can support ongoing active citizenship within the context of urban forestry governance. They meet monthly to discuss the strategic side of the program and look at community project proposals.

Stewarding trees safely and regeneratively into death provides another opportunity for growing community wealth. Urban Hardwoods, is a Seattle-based, high-end furniture maker that sources all its wood from salvaged trees within 15 miles of its shop. London's Fallen and Felled repurpose felled hardwood urban trees into timber for furniture makers, architects and designers.

It's vital to transition focus from planting to strategic maintenance, leveraging digital tools for monitoring and community engagement (particularly when this includes a community-facing interface like in NYC), remote sensing (LiDAR, satellite or community-based) and AI assistance to optimise resource allocation and foster active stewardship, ensuring the long-term success of urban forests.

BEYOND THE ROADMAP

NEXT STEPS IN A UK CONTEXT

Throughout the roadmap, we've shared a series of principles and guiding questions, we've identified various risks and challenges and highlighted inspiring, real-world examples. During the course of the work, we've also recognised a series of gaps, which design interventions could begin bridging.

REINVENTING METRICS

Creating design space to consider more equitable and impactful forms of urban forestry. While the UK government's decision to consider survival rates instead planting rates is a step in a positive direction, it could go further, by tracking the direct impact on reducing heat vulnerability and incorporating resident values - working with communities to define the metrics that matter to them.

TREE EQUITY 2.0

The UK Tree Equity map and LSOA level scores provide a great first-step towards establishment equitably, but could we also create tools that allow for data overlays.

Could we develop a tool that aggregates various metrics in such a way that communities can determine their own decision-making structure for scoring different projects? Could such a tool integrate innovative decision-making (such as quadratic voting) to support such a community on a journey to consensus?

REALISTIC, AND RELEVANT, CO-DESIGN

Tools like Wild Streets or UrbanistAI provide visually engaging interfaces to support people's imagination in terms of what's possible - but too often, these 'possibilities' do not respect the realities of establishing trees in cities.
Could we develop scientifically accurate "project proposal platforms" supported by digital twins of our urban forests - to educate communities about what the right tree in the right place could be?

ECO GUARDIAN

How could such a platform give voice to the non-human 'community members' - how could it recognise the land, flora, fauna, earth and natural systems as interdependent parts of such a community?

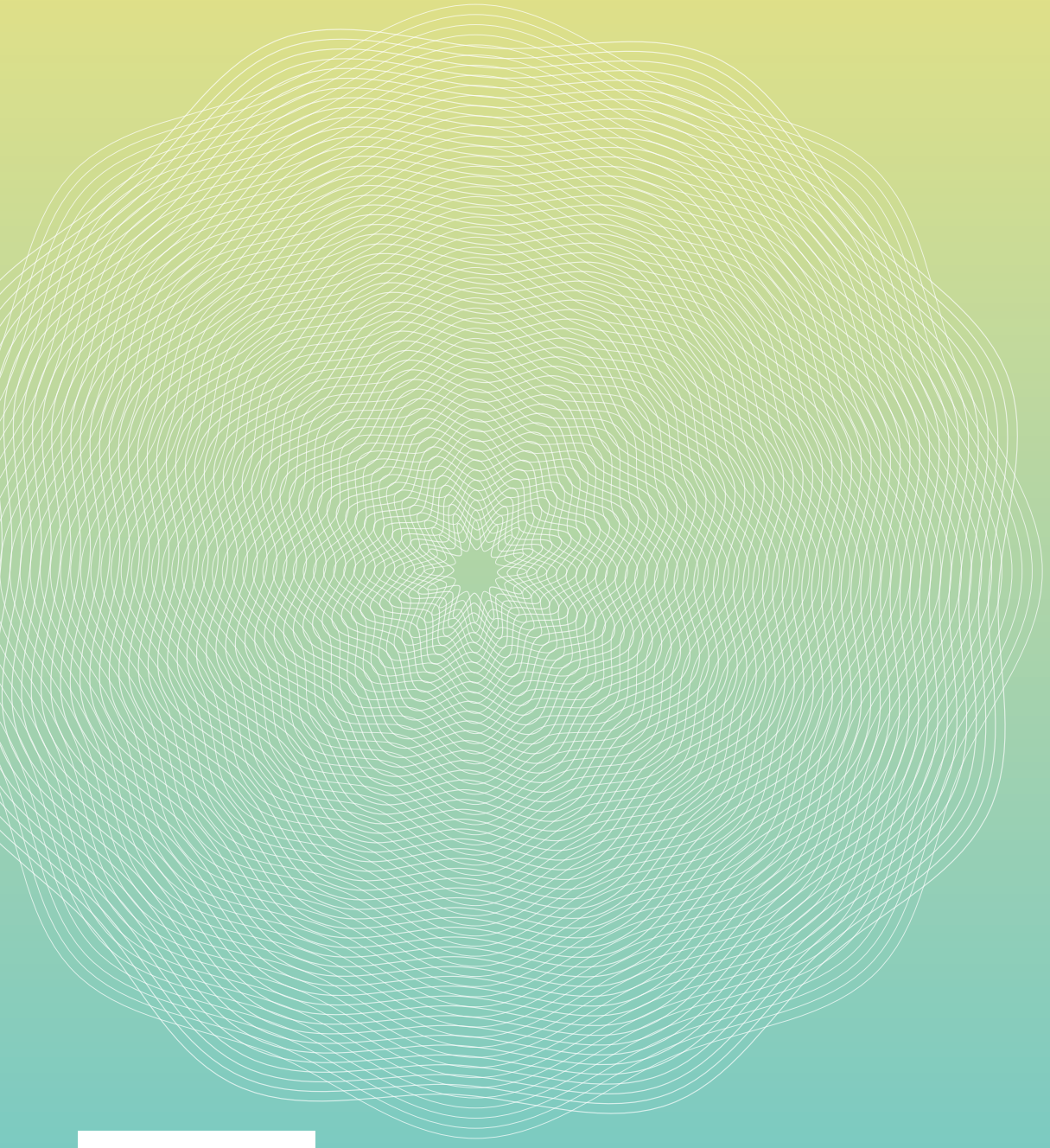
Imagine a digital platform that leverages augmented reality (AR), AI-driven chatbots, and a dynamic interface to revolutionise urban forestry decision-making, focusing on non-human city aspects like bees, rivers, and water systems. Through smartphones, human users can see real-time simulations of how proposed urban projects impact these natural elements. The chatbots could play the role of these members, providing insights on the benefits or consequences of certain decisions and offering alternatives when necessary.

FINANCING COMMUNITY STEWARDSHIP

What if we went a step further, using this data and platform better to capture the quantified benefits of the urban forest? What if the platform included investment opportunities where local and international civically-focused green urban investors could steer capital towards the multiple benefits created?

PILOTING IN PRACTICE

Making this vision a reality will require a series of place-based interventions - from training urban tree officers in these new digital, engagement and natural capital capabilities to organising events with various community groups to broaden the understanding of what the urban forest is for.



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