

TreesAI

in Glasgow

TreesAI is developing novel investment opportunities beyond Carbon, to help meet Glasgow's climate targets

Glasgow City Council (GCC) is partnering with NatureScot, the Scottish Government and Dark Matters Labs to develop TreesAI, an open source platform to map, value and finance urban forests. The initiative strives to establish nature as a critical part of urban infrastructure, alongside bridges, roads and rail, enabling investment, profitability and sustainability.

Project Synopsis

20.07.21

1.4tCO2 sequestered

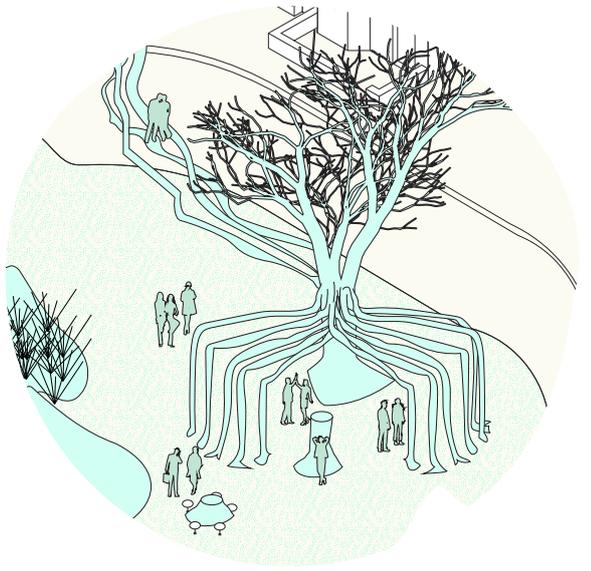
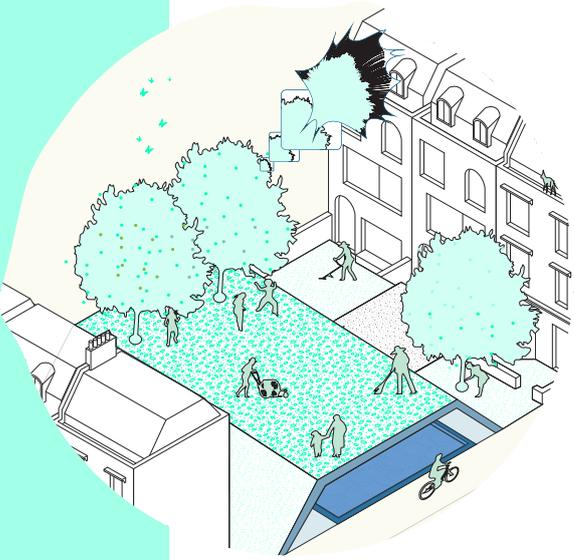
-€162 water treatment

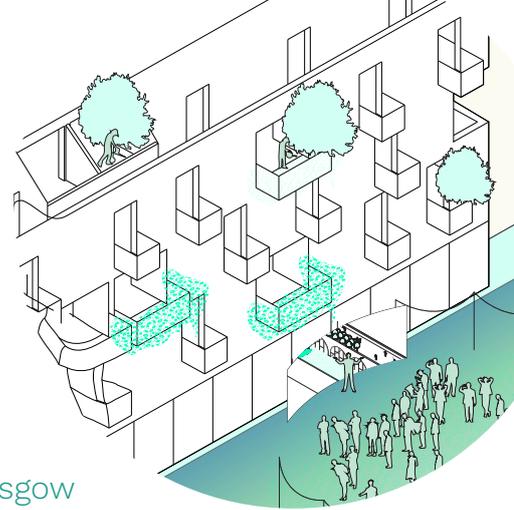
TreesAI

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Introduction

With a pledge to plant 18m trees in the lead up to COP26, Glasgow City Region is exploring radical new approaches to financing urban tree planting and maintenance, developing the next generation infrastructure to map, monitor and finance the city's urban forest.

Glasgow city has adopted a number of ambitious actions to contribute to The Glasgow and Clyde Valley Green Network mission. The city's Open Space Strategy and its Climate Emergency Implementation Plan are seeking to improve open space provision and increase tree cover, with for example, ensuring that homes outside the city centre are within 400m walking distance of a good quality public open space of 0.3ha or more. In order to achieve these objectives the city is working on delivering Nature-based Solutions (NbS), including urban forests.

Urban forests are powerful Nature-based Solutions (NbS) supporting human life and natural ecosystems. They provide multiple environmental, social and economic benefits such as: carbon sequestration and storage, providing shelter to wildlife, recreational areas for city dwellers, reducing heat island effects, improving human health, managing flooding incidents, offering food and shading, mitigating energy usage, while supporting urban biodiversity. A recent study shows that the value of stored carbon alone within Glasgow's urban forest today is £50 million, and is estimated to become £120 million by 2050.

However, today, we are struggling to maintain existing tree stocks, let alone create new ones. The UK is falling short of tree-planting targets by 17,000 hectares a year; and in Glasgow, delivering the Green Network over the next 35 years will require an estimated £1.1 billion—equivalent to approximately £33 million per year—while the project is already facing a 35% shortfall.

What is the problem? For too long we have valued trees as costs, not as valuable assets.

As a result, fifty percent of urban trees don't survive after 10 years of life, while the benefits generated by those same trees peak only after 50 years. Unless we improve the quality of planting and maintenance to sustain trees we will not be able to generate real environmental, social and economic benefits, helping us finance the green transition and reach our climate targets.

Glasgow City Council and TreesAI partnership

This partnership, between Glasgow City Council and TreesAI, will address the challenge of how the city of Glasgow will cope both with the upfront capital and, more importantly, the ongoing maintenance costs for sustaining trees in the future.

The outcomes of the partnership will focus on addressing the following challenges to help the city measure and contract for the benefits (ecosystem services) provided by urban trees:

- Lack of recurrent and good quality data: Lack of data is a key barrier to understanding and proving the performance of urban forest ecosystem services.
- Private funding gap: While a number of innovative NbS financing models have been suggested, these are not market-ready, and as a result public bodies struggle to gather revenue funding from multiple sources and scales of private fundings to maintain urban nature.
- Lack of standardised ecosystem services pricing: Urban nature is today accounted for as a cost not an asset, hindering scaling and investment opportunities for internalizing nature's services, as well as accounting for intangible and non-financial benefits.
- Outdated bureaucratic processes: Current practices lead to cumbersome financing/ contracting processes for both municipalities and investors.
- Lack of skills across the supply chain: Nature-based Solutions and Natural Capital are nascent fields of knowledge that are not yet widespread in the market or the public sector.

Our partners

confirmed

in progress

Google.org

Morgan Stanley



Partners

This partnership is between Glasgow City Council, Dark Matter Laboratories (TreesAI project holder), NatureScot and the Scottish Government and will be seeing to make this transformation in Glasgow City over the next two years.

This work has already gained the financial support of both Google.org Impact Challenge on Climate and Morgan Stanley Sustainable Solutions Collaborative.

TreesAI has also been recognised by the World Economic Forum's Trillion Trees Challenge and is supported by Europe's leading climate innovation initiative, EIT Climate-KIC.

As part of our first pilot in Glasgow we will be developing and nurturing conversations with NGOs and local communities, as well as regional and national stakeholders to ensure that learnings from the pilot can scale across multiple sites.

“So many of the challenges surrounding the climate emergency will be addressed by our cities and Nature-based Solutions are absolutely critical within that.

Urban forests deliver significant ecological, environmental and social gains, creating safer, more resilient and more liveable places. The road to Net Zero must also be delivered in a way that resonates with ordinary citizens and is relevant to their everyday lives. The transformation of the look and feel of our communities whilst addressing greenhouse gases does just that. Our status as COP host has given us a tremendous opportunity to attract some of the most pioneering approaches and interventions within the climate agenda. Our selection as a location for one of the projects supported by the Google.org Impact Challenge on Climate underlines that.”

Susan Aitken, CEO of Glasgow City Council

The lead up to COP26...

Carbon Plus, a new crediting system beyond carbon, for delivering and sustaining urban forests.

The first phase of this partnership will be to leverage the interest in COP26 to announce the forthcoming launch of a new carbon credit linked to Glasgow's urban forest. Glasgow City Council, with Dark Matter Labs, are developing Carbon Plus, a new credit programme that transforms the way we account and finance the maintenance of urban trees.

Carbon Plus are verified credits that help fund urban forests through local carbon offsets. The new credit recognises that urban trees deliver carbon-related services and multiple co-benefits for the city and the natural capital market. It accounts for and values carbon sequestration and storage, while estimating additional environmental impact measurements such as air quality improvements, water management, and human health benefits, reflecting the true environmental, social and economic benefits delivered by urban trees in metropolitan areas.

What is special about Carbon Plus? It recognizes the multiple benefits of urban trees without bundling the financial benefits or costs to one single stakeholder. As a result, it lays the foundations for recognising that the benefits of urban forests accrue to diverse beneficiaries. In the future, multiple funders and investors interested in other than carbon co-benefits—like water or health benefits—can fill the full capital gap required to scale and maintain urban forest projects. For example, Corporate Local Carbon Offsets funds will be matched with investments from water management and healthcare companies, to address the true costs of maintaining trees and their benefits in the long-term.

Carbon Plus credits are powered by the TreesAI open source platform. Using trusted satellite and ground data to map, monitor and account for the benefits provided by urban trees, the platform also provides a secure digital infrastructure for funders to invest in the growth of urban forest.

The long-term vision...

The future of financing urban forests, from credit to investment.

TreesAI is an open source platform that aims to encourage the development of the urban NbS market from carbon outwards, and from trees onwards. TreesAI is aiming to a) soon value and price water as well as health related benefits and b) in the future account for the co-benefits provided by other urban Nature-based Solutions (e.g. rain gardens or flood plains). The aim of this work is to extend interest in urban NbS through wider ecosystem services markets, by building an integrated ecosystem services registry. There is general consensus that ecosystem services will become tradable in the near future. There is already evidence of interest in biodiversity, water, health and other benefits with, for example, Natural England launching a Biodiversity Credit Scheme, NHS piloting Nature on prescription approaches, water management companies participating in environmental impact bond structures and water departments launching stormwater credits. For this reason and following COP26, within the scope of the partnership, Glasgow City Council, supported by TreesAI, will develop urban forestry investment strategies, beyond offsetting schemes.

The second phase of this partnership will seek to develop the first of additional financial products focused on water impact and health impact credits.

As a third phase, the partnership will aim to develop long capital financing instruments that combine investments and funding from multiple private entities, in order to grow and maintain urban NbS in the future.

TreesAI is being developed to enable long-term distributed stewardship of urban forests, based on the following principles:

- **Beyond carbon** → A transparent ecosystem services registry allows multiple entities to monitor & invest in the benefits provided by urban nature.
- **Digital contracts** → Smart contracts reduce bureaucratic and operational time and costs, ensuring secure multilateral payments for ecosystem services.
- **Long-term stewardship** → Outcomes-based financial instruments generate stable revenue streams to support long-term ecological maintenance and stewardship.
- **Collective intelligence** → Secure and trusted data is collected through machine sensing technologies, public institutional data infrastructures and citizen sensing groups enabling collective intelligence and engagement with NbS,
- **Beyond trees** → Urban trees are the Trojan horse for nurturing interest and investments in all Nature-based Solutions. TreesAI will continue to advocate for and work to establish Nature As Infrastructure, enabling other natural asset types to be recognised by the market as indispensable civic assets that benefit society at large; ultimately acknowledging the systemic and interconnected existence of Nature-

Next steps and deliverables

Dark Matter Labs and its team powering TreesAI is a strong advocate of an agile management methodology, encouraging teams to set clear goals and missions while progressively building specific tasks and deliverables. This can allow teams to be more flexible when facing obstacles that are outside of the team's control and to respond proactively and creatively to challenges. For this reason we have an overarching two-year mission, while we co-create deliverables every six months with our key partners.

Passed

Build an NbS bio-regional movement

Glasgow selected as the pilot site amongst Madrid, Milan.

Scope, build and sharing learning tools:

1. System architecture
2. Stakeholder buy-in and framework legitimacy
3. General market design & requirements

June-July

TreesAI in Glasgow partnership kick off

User research and baseline high level review of Urban Forest management;

High level canopy cover map of Glasgow City Council;

Communication strategy and image to engage Key stakeholders.

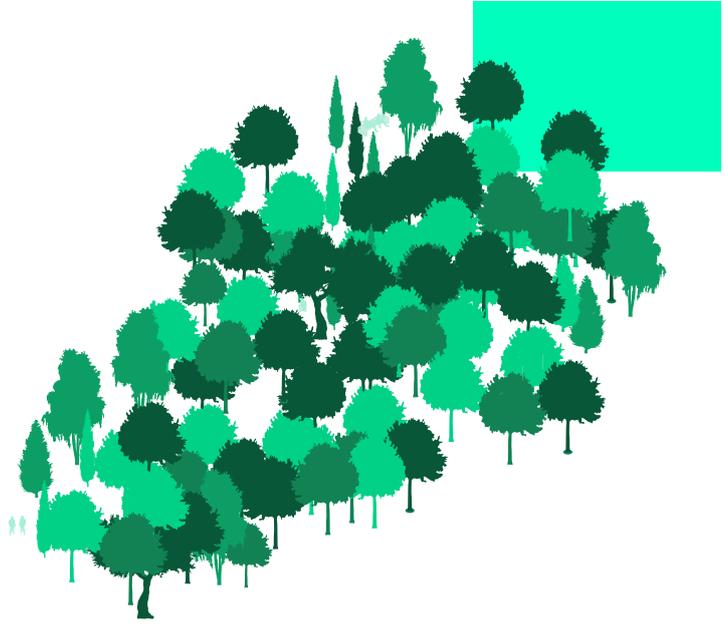
Aug-Oct

Build MVP Carbon Plus Portfolio

Baseline high level review of Urban Forest management;

Share work update (Citizens sensing events Glasgow, Madrid and future cities south east Europe) during the Virtuous Economy Forum;

High level analysis of the Ecosystem Services related to a number of selected sites.



Nov

Dec

 **Announce forthcoming launch MVP Carbon Plus Credit and Portfolio at COP26 in Glasgow**

 **share learnings and build next steps**

Online Campaigns and publish report

Take part in various COP26 related and other events to showcase project development and gather feedback.

Legacy

TreesAI will aim to leave the following legacy to Glasgow City Council:
A more complete, streamlined and linked up Urban Forest data infrastructure.
Open access to the pilot version of the platform that aims to enable city stakeholders to collectively value and invest in urban nature.

Any funding that might be raised through the platform during the duration of the partnership, net of any transaction fees incurred that should be agreed in due time.
Good reputation in relation to the use of cutting edge technologies and practices in the climate transition and urban forest sector.

For more information about the nature of this partnership please review this Memorandum of Understanding, which also contains an indication of the commitment in kind expected from Glasgow City council and also the partner benefits.

Get in touch

Adam Purvis
Adam@darkmatterlabs.org

Carlotta Conte
carlotta@darkmatterlabs.org

Konstantina Koulouri
konstantilenia@darkmatterlabs.org

Links to DM relevant work:

[Civic Capital](#)
[Scotland's Nature-based Solutions](#)
[Micro-treaties with the Earth](#)
[Civic AI](#)
[An Alliance for Long Investing](#)

About TreesAI and Dark Matters Laboratories

TreesAI is part of Dark Matter Laboratories (DML), a strategic discovery, design and development lab working with partners across the planet to build pieces of institutional infrastructure required to transition society in response to technological revolution and climate breakdown. Dark Matter Laboratories aims to do so in the interest of public value and good.

TreesAI (Trees as Infrastructure) is an open source platform that aims to enable city stakeholders to collectively value and invest in urban nature. TreesAI aims to make it easy to map and forecast ecosystem services, such as carbon, storage, stormwater runoff and energy savings. By connecting environmental impacts with finance, TreesAI unlocks novel financing streams—from citizens to corporates, or healthcare providers.

Dark Matter Laboratories

20 July 2021

TreesAI

