

Office of Energy and Climate Change

# Climate Change Fund

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Executive summary – *Greening our City Program*

7 July 2023

# Executive summary

The Climate Change Fund (CCF) requires all programs to be periodically evaluated. These evaluations are conducted in line with the [NSW Treasury Policy and Guidelines' Evaluation](#). This report presents the results of the outcome evaluation of the first phase implementation of the Greening our City Program by the NSW Department of Planning and Environment (the Department).

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## Context and background

The program's purpose is to ameliorate climate extremes by delivering a canopy expansion program that provides shade and reduces urban heat through tree planting and urban greening. The initiative aims at providing social and environmental benefits to communities. Specifically, the program aims to:

1. Enhance, monitor, and protect Greater Sydney's urban tree canopy, which has significant potential to boost the city's resilience to a changing climate,
2. Contribute to increasing Greater Sydney's average canopy coverage from 21% to 40%,
3. Deliver a range of benefits including reducing the impacts of climate change on people, communities, and infrastructure.

The program commenced in 2018, and in 2019 adopted the Premier's priority objective to increase tree canopy and green cover across Greater Sydney by planting one million trees by the end of 2022.

## Outcome evaluation

### Objective

The overarching evaluation objective was to 'evaluate the impact and contribution the Greening our City program (the program) is having on canopy cover and related environmental co-benefits, as well as impacts on social health and well-being, collaboration, and capacity building'.

Other objectives of the evaluation were to:

- confirm whether the program is on the right trajectory to deliver on the long-term program goals,
- establish a baseline of results,
- estimate future impact,
- make recommendations to support future program delivery and evaluation,
- develop repeatable methods for future assessments.

This report presents findings on the following program's key evaluation questions (KEQs):

**KEQ 1:** What has been the programs' impact on tree canopy cover in Greater Sydney?

**KEQ 2:** What has been the programs' impact on urban heat in Greater Sydney?

**KEQ 3:** To what extent has the program delivered environmental co-benefits?

**KEQ 4:** What has been the programs' impact on social and health benefits?

**KEQ 5:** To what extent does the program provide effective mechanisms to better understand the barriers to increasing urban tree canopy cover, and to enhance stakeholder understanding of the benefits of tree canopy?

The Department engaged Alluvium Consultants to conduct an independent outcome evaluation of its Greening our City program.

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## Data sources

The evaluation used different quantitative and qualitative methods to inform the evaluation of each of the KEQs and sub-KEQs. Specifically, a mix of a) observations and measurements acquired during site assessments, b) modelling using predictive tools (i-Tree Eco), and c) qualitative and quantitative information extracted from interviews and surveys collected at a single timepoint were used (Fig 1).

## Data limitations

- There were some limitations with respect to data collection in that the timing or number of samples across projects sites and interviewees / survey participants were limited by time and resources. Additionally, data limitations impacted the ability to assess canopy, heat and environmental co-benefits. Furthermore, there is the absence of a baseline or adequate data benchmarking. The data collected is not consistent, particularly spatial data collected to assess urban tree canopy.
- The regional analysis of the impact of the program on canopy cover and ecosystem services was constrained to approximately 32,000 trees. This represents around 3% of the approximately 1,000,000 trees planted at the time the analysis was undertaken, which limits the confidence in extrapolating the results beyond the analysed trees.
- The full range of data required for i-Tree Eco to maximise the accuracy of modelling results was not available for the regional analysis.
- The data collected on social health and wellbeing was limited to four sites and likely does not represent the full suite of project sites funded under the Greening our City program.

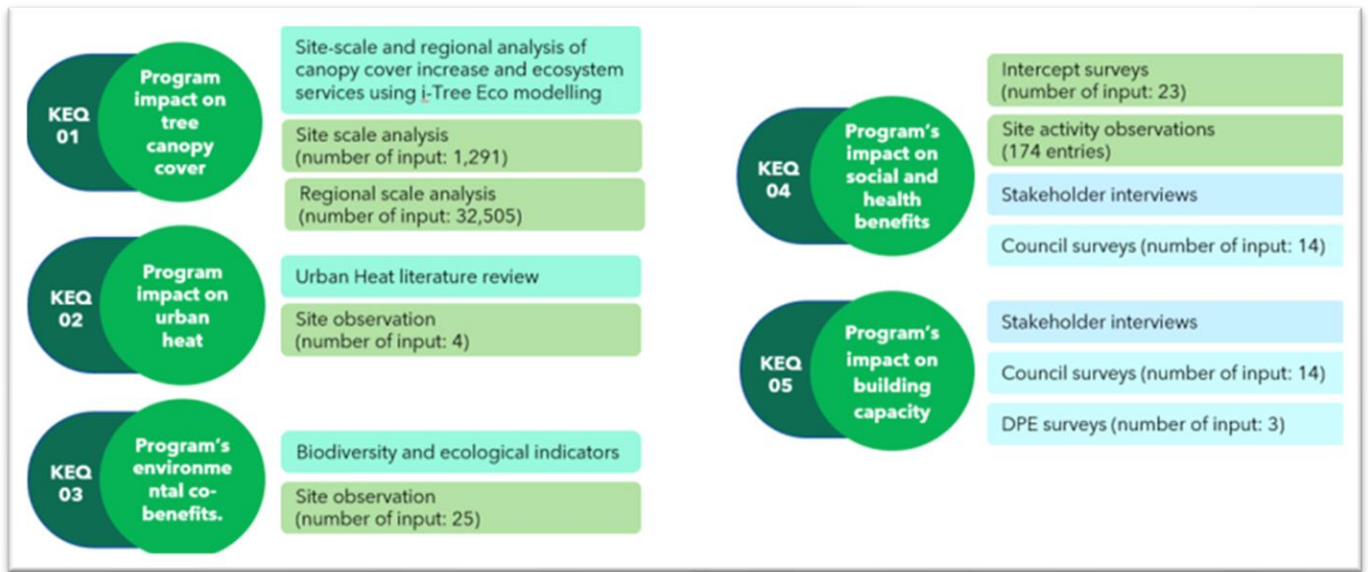


Figure 1 KEQs and data collection methods

## Funding

The Greening our City program was allocated \$37.5 million over four years from 2018-19 to 2021-22 from the CCF to support this work. This funding was fully and appropriately expended in line with program objectives.

## Key findings and recommendations

Overall, the evaluation found the program is on the right trajectory in delivering its long-term goals:

- trees planted are expected to deliver increased canopy cover and ecosystem service benefits of reduced air pollution, and increased carbon sequestration by 2050, and reduced exposure to heat.
- tree planting sites are associated with opportunities for psychological restoration and relaxation and support visitors in connecting with nature.
- tree planting has facilitated social cohesion and encourages physical activity.



**1 million trees planted by December 2022**

including trees planted through initiatives such as Planet Ark's National Tree Day, Greening our City and Five Million Trees Grant Programs, Council tree planting programs, plantings on NSW-Government owned land (e.g. Western Sydney Parklands) and community members planting trees on their land.

Over 296,000 trees planted by a NSW Government Agency  
Between 2018 to 2022

Over 36,000 free tree giveaways  
Bunnings in 2020-21

Over 87,000 trees planted through *Creating Canopies*  
Landcare NSW between 2020 to 2022

Nearly 24,000 trees planted on private land  
*Champions Program* in 2022

Over 62,000 trees planted by councils  
Five Million Trees and Greening our City Grant Programs from 2018 to 2022

Over 12,800 trees donated to National Tree Day  
Planet Ark between 2020-22

Over 45,000 trees planted through *Cooling Schools*  
Greening Australia from 2020 to 2022

Over 7,600 trees provided to households  
IndigiGrow in 2021

Figure 2 Program highlights

**Program impacts**

The program has achieved some significant targets since its inception in 2018.

- The achievement of the one million tree target by December 2022.
- The geographic reach of the individual tree registrations (by LGA). Most tree registrations occurred in the Western Sydney suburbs, with Blacktown recording the highest registrations.

Figure 3 Quantum of trees planted across the Program

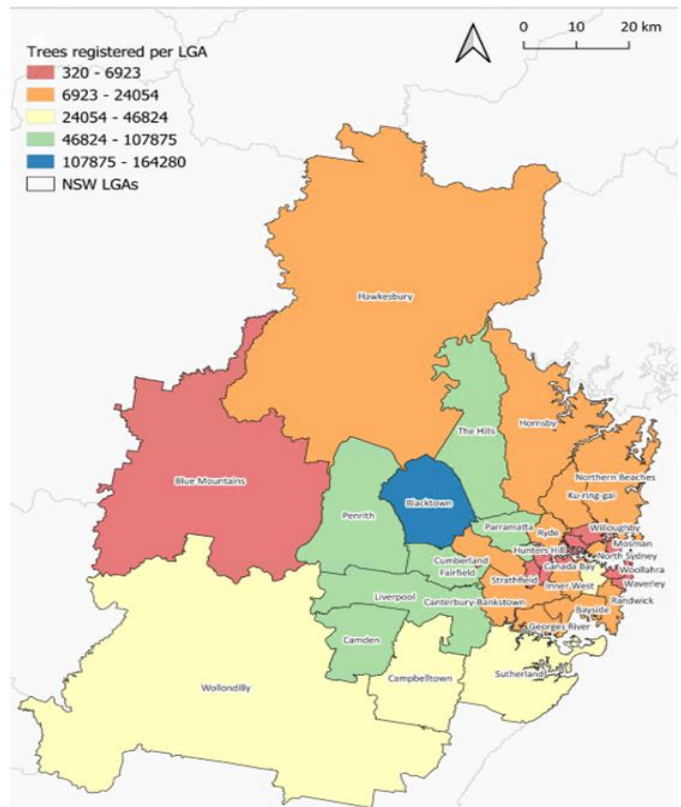


Table 1 Recommendations answering the key evaluation questions

Key evaluation question	Evaluation finding	Recommendation
<b>KEQ1</b> Impact on canopy cover	<ul style="list-style-type: none"> <li>Overall canopy cover has increased and is projected to continue to increase to 2050.</li> <li>Planted trees' derived ecosystem services include air pollution removal, avoided stormwater runoff and carbon sequestration.</li> <li>The reduction in tree numbers due to mortality is within the normal range expected for tree planting projects.</li> </ul>	<ul style="list-style-type: none"> <li>Investigate ways to align or streamline individual tree registrations to ensure as many trees as possible are captured by the Program.</li> </ul>
<b>KEQ2</b> Impact on urban heat	<ul style="list-style-type: none"> <li>The conditions required to maximise urban cooling were satisfied through accommodating the tree planting criteria (biotic or abiotic surrounding, growth, microclimate, and resilience). However, it should be noted that not all species possess the same capacity to tolerate extreme urban conditions.</li> </ul>	<ul style="list-style-type: none"> <li>Revise balance of species planted and in the free tree giveaways to best achieve Program outcomes.</li> </ul>
<b>KEQ3</b> Deliver environmental co-benefits	<ul style="list-style-type: none"> <li>Air pollution removal, carbon sequestration, and stormwater runoff avoidance have increased with the program and are projected to continue to increase to 2050.</li> <li>Improvements in biodiversity and ecological function were minimal.</li> </ul>	<ul style="list-style-type: none"> <li>In recognition that the Program outcomes will be significantly enhanced if quality planting of trees is prioritised so that trees can reach maturity in good health, consider support for grant recipients to:                             <ol style="list-style-type: none"> <li>Install / design for passive or active irrigation of trees beyond the maintenance period,</li> <li>Cluster planting for vegetation structure, density and diversity, and to achieve microclimate outcomes.</li> </ol> </li> </ul>
<b>KEQ4</b> Impact on social and health benefits	<p>Overall, positive participant perception of the program's beneficial impact.</p> <ul style="list-style-type: none"> <li>Tree planting locations were shady and cool. They will contribute to urban cooling.</li> <li>Tree planting sites are associated with opportunities for psychological restoration and relaxation.</li> </ul>	<ul style="list-style-type: none"> <li>To enhance the impact on social health and wellbeing, investigate ways the Program can link social activation of project sites using social programs (like park runs or play groups) or social infrastructure (signage, trail upgrades, seating).</li> </ul>



Key evaluation question	Evaluation finding	Recommendation
<p><b>KEQ5</b> Build capacity</p>	<ul style="list-style-type: none"> <li>• Interviewed stakeholders acknowledge that the existence of the Greening our City program was a significant enabler to increase urban tree canopy cover and improve stakeholder engagement.</li> <li>• Some interviewees noted a positive change in community perception thanks to the program. This resulted in increased desire to receive more trees.</li> <li>• Individuals who already planted trees are most likely to plant again.</li> </ul>	<p>Build the capacity of local government to plan for deliver, and maintain a healthy and thriving urban tree canopy and greening projects through:</p> <ul style="list-style-type: none"> <li>➤ Long-term grant funding (e.g., as for Metro Greenspace and Enviro Trust programs)</li> <li>➤ Reliable and consistent spatial data relating to urban canopy,</li> <li>➤ Promotion of the data available to local government on urban ecology (threatened species sites, fauna movements, riparian corridors and connectivity), urban heat, health and wellbeing indicators,</li> <li>➤ Development of statutory policy framework for the protection, provision and regulation of urban canopy trees and greening,</li> <li>➤ Maintain and expand guidance material for urban trees and greening) e.g., creating biodiverse cities, integrating tree planting and greening with WSUD, behaviour change programs and engagement).</li> </ul>
<p><b>Other recommendations</b></p>	<ul style="list-style-type: none"> <li>• Outputs need to stay aligned with desired outcomes and scope</li> <li>• There is limited data and inconsistency with data capture impacts assessment.</li> <li>• The program is solely focussed on trees while many other greening options can deliver on overall program outcomes.</li> <li>• Some sites assessed are only focussing on a few objectives and do not address all key evaluation questions.</li> <li>• A more rigorous process is needed to avoid duplication and to register data from individuals planting trees in the community.</li> <li>• Research shows an appetite from younger age groups for tree planting</li> <li>• Participating councils identified a lack of resource or capacity which impacts the implementation of the grants</li> </ul>	<ul style="list-style-type: none"> <li>➤ Regularly review the program activities against the 'Program Logic' to make sure activities are delivering on immediate and longer-term Program outcomes.</li> <li>➤ Develop a clear data collection plan aligned to the Program logic (using reliable, regular, consistent and robust data sources) that is sufficiently detailed to: <ul style="list-style-type: none"> <li>a. Enable adaptive management and planned evaluation across all outcome areas,</li> <li>b. Improve the regular, specific, efficient and timely collection of Program data (by the Department and others - councils and Program industry partners),</li> <li>c. Enable the Department to fill data gaps in community sentiment, capacity, ecological connectivity and biodiversity and impacts on social health and wellbeing.</li> </ul> </li> <li>➤ Expand the Program and update the Program Logic to include 'greening' in addition to trees (i.e. shrubs and groundcovers, green roofs and walls) to reflect the significant efforts in these areas by the Department and Program partners and to maximise Program outcomes across urban cooling, biodiversity and social health and wellbeing</li> <li>➤ Define specific terms (for example environmental co-benefits, capacity) used in the Program Logic to support the adaptive management approach and planned evaluation.</li> <li>➤ Recognise that not all Program activities will address all Program outcomes. Target monitoring to collect data against the primary objective as a priority.</li> <li>➤ Investigate ways to engage youth (15-24 years) in the Program and communicate the benefits of urban trees and greening.</li> </ul>

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## Conclusion

Overall, the evaluation found the program is on the right trajectory to deliver on its long-term goals. Continuing the program is expected to deliver:

- increased canopy cover and ecosystem service benefits of:
  - reduced air pollution,
  - increased carbon sequestration by 2050,
  - reduced exposure to heat, and
  - improved resilience in urban impacted areas.
- positive opportunities for psychological restoration and relaxation and support visitors in connecting with nature.
- increased social cohesion and physical activity.
- Improved capacity across industry and partners leveraging on the program (based on results of interviews and surveys of project partners, including local government and industry partners).

The program makes a significant contribution towards achieving the 40% tree canopy target set for Greater Sydney.



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