

# The value of Sheffield's trees

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**Air pollution regulation** – can reduce PM, So2 and NOx – help avoid penalty payments, and improve health (reduce costs to NHS).

**Meeting carbon zero targets** through carbon sequestration – trees sequester a significant amount of carbon (help with climate change mitigation and reach new 2050 carbon target).

**Mitigating climate change** – a role in cooling the city and also avoiding surface run off and thereby reducing the risk of flooding, significantly reducing pressure on drainage systems in urban areas (directly intercept rain, promoting higher infiltration rates and greater water use, reducing damage costs and saving lives and cost to NHS).

**Amenity value** – Aesthetic, inspiration value and other social aspects of urban tree benefits (increasing mental health).

- See the stock as a whole as an asset that provides numerous benefits. How do we optimize the benefits it provides in terms of health, amenity, and all of the above into the future?
- Is it cost efficient to manage and maintain this stock given the public benefits it provides (that saves money through reducing flood damage, saving lives through cooling, helping to reduce pollution along with reducing emissions)?

**Scenario analyses** – once we know the baseline we can see what happens to the benefits and the cost-benefit ratio once we have made some changes to the stock (species, age structure etc).

- How will replacing or adding trees affect the overall asset value, benefits and cost-benefit ratio?
- Where should the trees be positioned in order to maximise certain benefits – i.e. reducing pollution, cooling / soaking up water?

# Quantification of ecosystem services and valuation of benefits

## ***i-Tree Eco***

- i-Tree Eco has been developed over many years by the United States Department of Agriculture Forest Service. Successfully applied in more than 100 countries and several UK cities.
- iTree measures summary of basic structure of the tree stock and quantifies the amount and value of air pollution, carbon storage, carbon sequestration and avoided surface run off.
- Min data requirements: species and trunk diameter at breast height (DBH). Better results with more data e.g. tree height.

## **CAVAT** (Capital Asset Value for Amenity Trees)

- Expert-based amenity tree valuation tool developed by the London Tree Officers Association.
- Quick CAVAT method for single trees (not tree groups).
- Min data requirement = life expectancy, functional value or tree and DBH. The human population density nearby is also required (2011 Census at ward level used).

**Natural capital accounting** – quantification and valuation of the benefits at the scale of the asset (rather than individual trees). Can do all i-Tree achieves apart from the avoided surface run-off.