POLLUTION CALCULATOR

OBJECTIVE

Students use online software to project the impact that planting or removing trees would have on levels of particulate matter pollution across different parts of the UK.

OVERVIEW

There is a growing urgency regarding the environmental health problems associated with air pollution. As well as efforts to reduce emissions, responses increasingly recognise the capacity of the natural environment to remove pollutants from the air.

Each year London's trees remove 2,241 tonnes of pollution worth £126 million[1]. Air pollution is a major issue in London and the contribution made by trees to its reduction has a direct positive impact on public health and is – literally – life saving.

It is estimated that vegetation, including trees, and other natural habitats removed more than 1,325,000 tonnes of pollutants from the air in the UK in 2015. The value of the avoided health impacts was estimated to be around £1 billion per year, which could add up to around £34 billion over the next 100 years[2].

POLLUTION REMOVAL BY PLANTS

A new interactive online tool is set to encourage tree planting initiatives across the UK. It calculates how much pollution would be removed by planting trees in local areas, as well as the corresponding public health cost savings.

Scientists at the Centre for Ecology & Hydrology teamed up with **eftec**, a leading environmental economics consultancy, to develop the tool, which shows the amount of woodland in each local authority in hectares, how much particulate matter (PM2.5) the trees remove from the air and the predicted public health cost saving in that area over a 100-year period.

shiny-apps.ceh.ac.uk/pollutionremoval/

TIME NEEDED

20 minutes

PARTICIPANTS

Individual working followed by class discussion

RESOURCES NEEDED

Internet access

LEARNING OUTCOMES

- understand that trees remove pollutants from the air
- appreciate that reducing air pollution benefits human health and reduces healthcare costs
- interpret observations and data, including identifying patterns and using observations, measurements and data to draw conclusions

[1] Valuing London's Urban Forest Results of the London i-Tree Eco Project (2015). treeconomics.co.uk/wp-content/uploads/2018/08/London-i-Tree-Report.pdf

[2] Jones et al (2017), Developing Estimates for the Valuation of Air Pollution Removal in Ecosystem Accounts. Final report for Office for National Statistics. ons.gov.uk/economy/environmentalaccounts/articles/developingestimatesforthevaluationofairpollutionineco syste maccounts/2017-07-25

INSTRUCTIONS

1. Working individually, or in pairs, select on the map the part of the country you would like to analyse for current and projected pollution levels.
2. Create a profile for your chosen local authority, including its name and population, its total area and area of woodland in hectares.
3. What is the current economic value of health benefits that this woodland provides (the asset value of removing PM2.5 pollutants from the air)?
3. Create a table to record the existing PM2.5 data and projected changes. Include:
    - existing woodland (hectares)
    - current asset value of PM2.5 removal
    - woodland planted or removed (hectares)
    - change in asset value
4. Calculate and record results for 1, 10, 25, 50, 100 and -1, - 10, -25, -50, -100.
5. Compare results as a class. Which areas had the highest change in asset value? Which had the lowest? Why do the results vary across regions?

CLASS DISCUSSION

- What are the benefits of the tool?
- Who would use it?
- How else can we reduce air pollution
- What other environmental benefits do trees bring?