

Urban greening for heat-resilient neighbourhoods: insights from a community research process



Dr Leslie Mabon
The Open University
@ljmabon
Leslie.Mabon@open.ac.uk



The problem

- Parks, trees and other green spaces promoted as a strategy for reducing risk from extreme heat in cities – especially in summers;
- *But* need to understand how neighbourhoods experience hot weather, and how they see nature as reducing this risk;
- *Also* important to consider how species planted today may cope in the future;
- How can green space be better planned to enhance heat resilience, in a way that engages and empowers neighbourhoods?

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Policy Briefs November 2021

Why your city should use nature-based solutions to

Adapting to Climate ChangeSpotlight On: Nature-based Solutions

Source: https://www.c40knowledgehub.org/s/article/Why-your-city-should-use-nature-based-solutions-to-manage-climate-risks?language=en_US

Author(s): C40 Cities Climate Leadership Group, C40 Knowledge Hub

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In the race to mitigate the changing climate and adapt to its effects, nature is a vital ally for cities. As the latest Intergovernmental Panel on Climate Change (IPCC) [report](#) emphasised, climate hazards will continue to intensify in cities around the world as global temperatures rise.¹ Nature-based solutions are critical to building urban resilience in the face of evolving climate risks, as well as sequestering carbon and offering a host of other benefits. From planting trees to restoring coastal mangroves, these are approaches that protect, restore and sustainably manage green and blue infrastructure and wider ecosystems.² Here's why your city needs them.

Urban nature protects against all climate hazards

Natural infrastructure and ecosystems act as buffers to climate hazards, helping to regulate climate impacts and protect urban residents and infrastructure.³ This saves lives, improves health and helps cities avoid significant disruption and costs. [Nature-based solutions: How cities can use nature to manage climate risks](#) provides advice on implementing these approaches.



Taking a step back: explaining some jargon

- ‘Green space’: parks, trees, gardens, any kind of nature near to where we live:

“Where you walk your dog”

- Nature-based solutions/green infrastructure: working with nature to bring a breadth of contributions to people;
- Heat: both short bursts of extreme high temperatures (heatwaves) *and* slower-onset increases in average temperatures;
- Resilience: ability to withstand shocks and stresses, and/or transform in response.

The Team

Open University: Leslie Mabon, Verina Waights, Jitka Vseteckova, Meng-Chin Tsai;

University of the West of England: Alice Moncaster;

Sniffer: Linda McConaghie, Eleanor Pratt, Ben Connor, Catherine Pearce;

National Taiwan University: Wan-Yu Shih, Te-Lun Ou Yang;

Govan (Glasgow): Charlotte Craig (Impact Arts), Linnea Blair, Nayab Khalid, Chris McCartan, Annie Morgan, Matthew O'Donnell;

Pollok (Glasgow): Trinidad Cabezon Droguett and Helen Mill (Village Storytelling Centre), Donna Foote, Elaine McLean.





What we've been doing

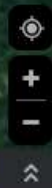
- Two different cities: Glasgow, Scotland; and Taipei, Taiwan;
- Work with neighbourhoods with high heat risk and *different* green space characteristics: Govan and Pollok in Glasgow; Shezidao in Taipei;
- Workshops: ask participants to draw maps of green spaces in their neighbourhoods, and of what they did when it was very hot;
- Working with community researchers in Glasgow to collate fellow residents' experiences.

Shezidao



Taipei, Taiwan

Google











安樂社

安樂社

福自天降匪深感民之自正





Govan

Pollok

Glasgow, Scotland, UK

Google





A1 - 43
LYONCROSS
ROAD →







WEEDS ARE WONDERFUL

WEE SONG ABOUT A PLANT
 IT GROWS GROWS GROWS GROWS
 IN THE WAY I WONT I THINK THINK
 THINK THINK ABOUT IT A LOT LOOK
 LOOK LOOK AT YOURSELF GROWING
 FASTER HIGHER N HIGER TWISTING TURNING
 I THINK THINK THINK ABOUT IT A LOT
 A THINK THINK THINK IT NOT ALL
 ABOUT ME GROWING CROWS

DAVID
 MONE THE GALGALE
 THE JAGIEZ MONE THE
 PEOPLE

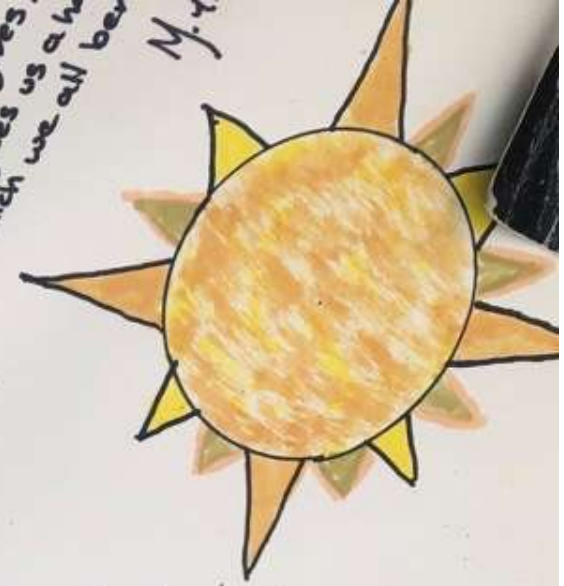
GROW A TREES
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FREE AS A
 BIRD

MONE THE
 EARTH WORMS

MAKE SCOTLAND
 GREE AGAIN

The Sun gives
 and gives us a
 which we all be
 M.Y.



"I Heard about
 Gal Gael through the
 Community Links
 WORKER" TILUOI

Hardship Brings Resilience to Resurgence
 when Gal Gael Shift down due to the need
 Building the focused on improving the
 grade infrastructure outside and inside
 Canons





Being outdoors in the heat

- In both Glasgow – especially Pollok - and Taipei, residents walk long distances to reach shade or key services;
- Levels of shading can vary significantly between neighbourhoods and even different streets;
- Glasgow: trees bring shade in summer, but can also lead to wet leaves in autumn or uneven pavements from roots – dangerous for people who are older or have mobility issues?





How heat is experienced

- Outdoors and in or near green spaces are not the only way people in Glasgow and Taipei experience hot weather: temples, verandas, gardens, pubs...
- As well as providing spaces for shading or cooling, communal spaces also act as spaces for interaction – especially for older people;
- In Scotland, climate change and weather also does not mean heat: wetter weather can change experiences of parks and urban forests

Who makes decisions about green spaces, versus how heat experienced?

- In neighbourhoods in both cities, residents felt they were unable to influence how local government looked after green spaces;
- This matters because being able to connect with green and open spaces and the people in them, and having a sense of control over what happens, supports connectivity;
- Also concern, especially in Glasgow, that lack of engagement means species being planted that are not resilient to changing and more extreme conditions?

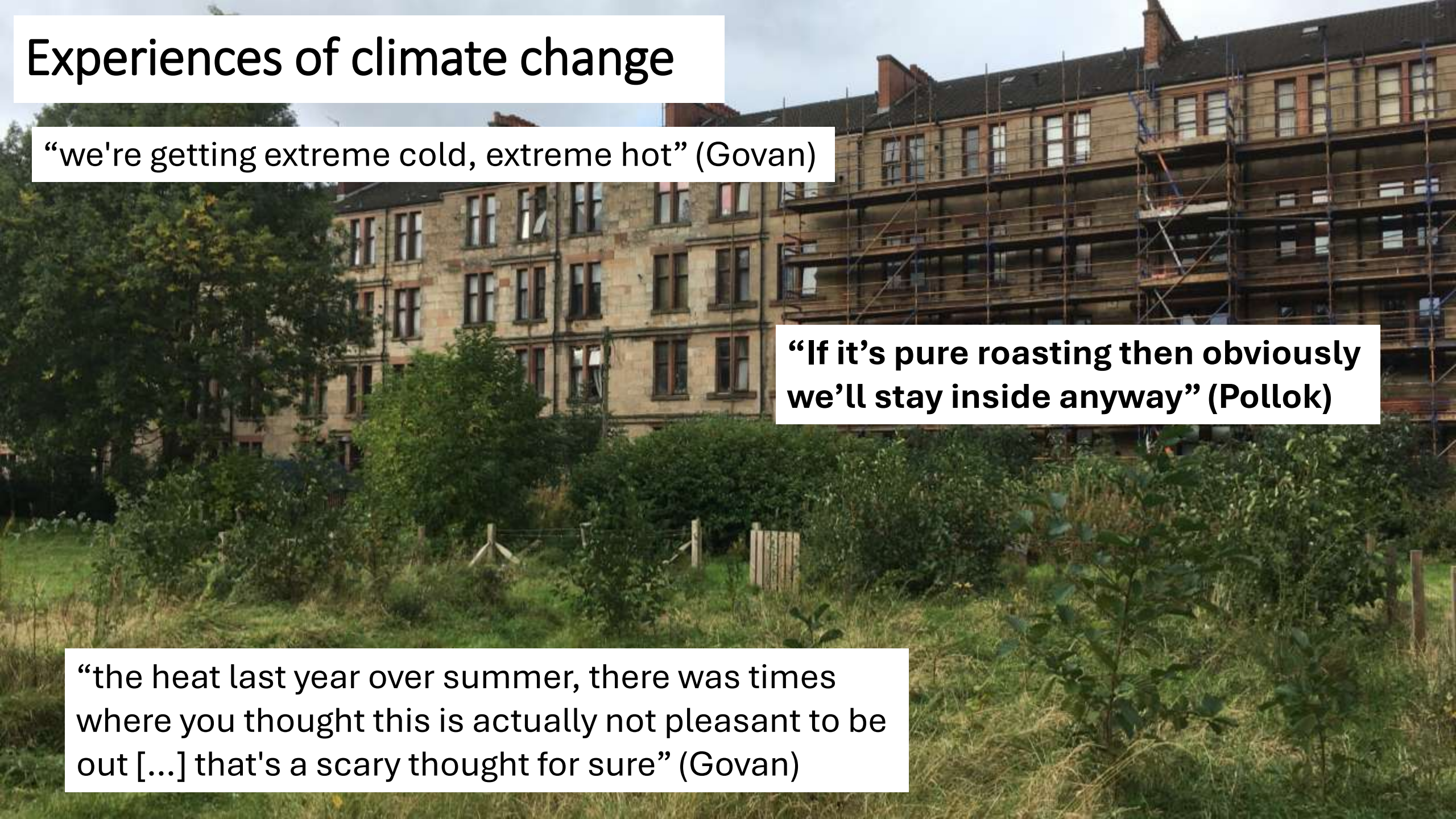




COMMUNITY RESEARCH IN GLASGOW

- Community researchers: work with 7 residents (2 Pollok, 5 Govan) to develop research questions, interview schedules, and conduct analysis;
- Work with anchor organisations (Village Storytelling Centre in Pollok; Impact Arts in Govan) to recruit researchers and establish relations.
- Research process developed across a series of 1–2-hour sessions over a 6-month period, with guidance from Open University researchers.

Experiences of climate change

A photograph of a multi-story residential building, likely in Glasgow, Scotland. The building is made of light-colored stone or brick and has many windows. Scaffolding is visible on the right side of the building, indicating renovation work. In the foreground, there is a dense area of green bushes and trees, partially obscuring the lower part of the building. The sky is overcast.

“we're getting extreme cold, extreme hot” (Govan)

“If it’s pure roasting then obviously we’ll stay inside anyway” (Pollok)

“the heat last year over summer, there was times where you thought this is actually not pleasant to be out [...] that's a scary thought for sure” (Govan)

Inequality and justice

[Graving Docks] is a green space [...] **when it gets all developed that's gonnae disappear.**

Those plans are for homes now, is it not luxury flats that are getting built there?

(Govan)

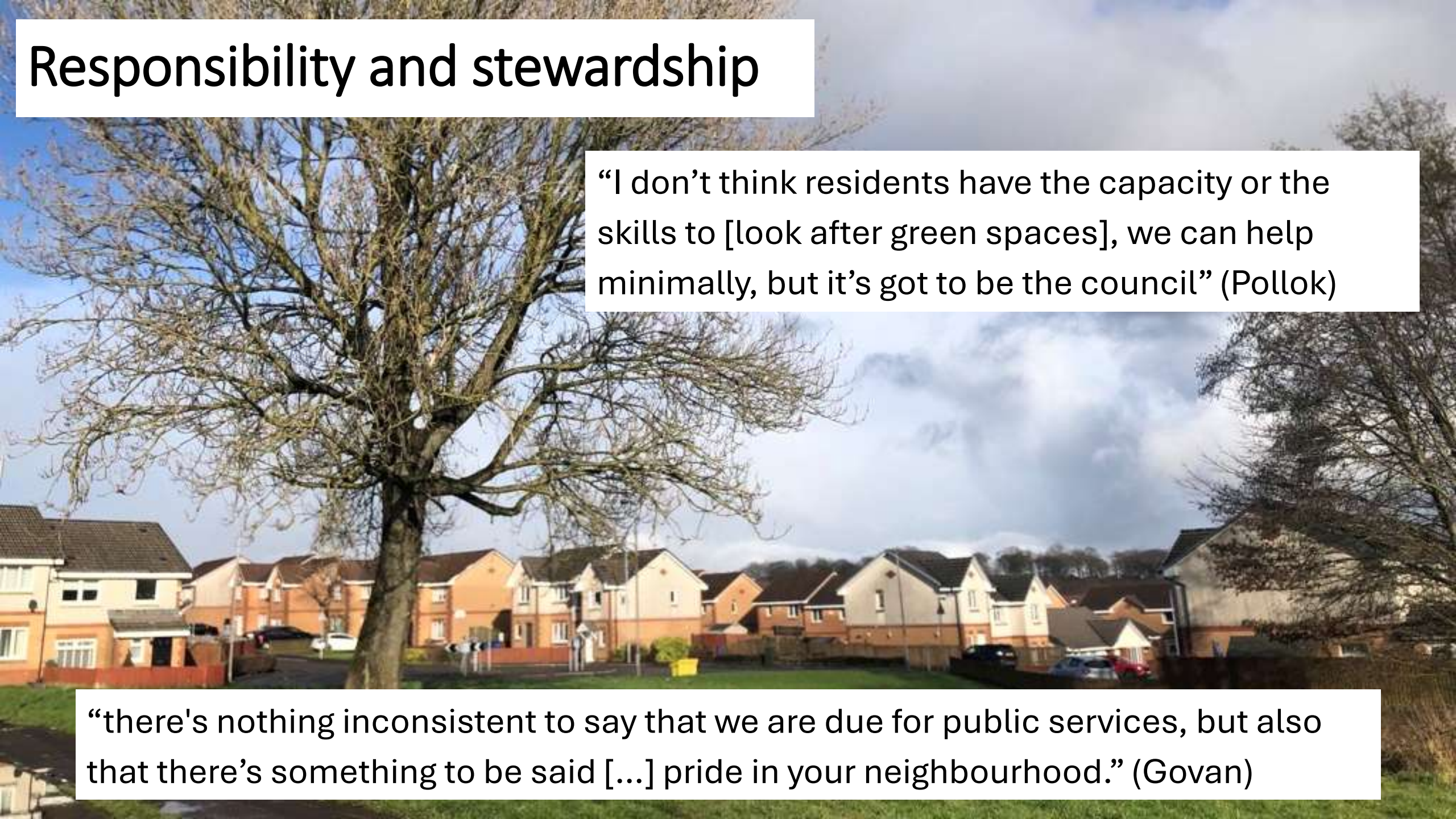
“So 300 trees were planted two years ago.

Without much consultation with local people [...] we would definitely not have suggested trees to be planted this young and an area like this” (Pollok)



"What I really like about Glasgow as well is a lot of the green spaces are public green spaces. If you go to Edinburgh, a lot of them are like private land and for residents only, which always kind of bugs me when I go there " (Govan)

Responsibility and stewardship

A photograph of a residential street. In the foreground, a large, leafless tree stands on the left. Behind it, a row of terraced houses with orange brick and white window frames stretches across the middle ground. The sky is overcast with grey clouds. The overall scene is a typical suburban neighborhood.

“I don’t think residents have the capacity or the skills to [look after green spaces], we can help minimally, but it’s got to be the council” (Pollok)

“there's nothing inconsistent to say that we are due for public services, but also that there’s something to be said [...] pride in your neighbourhood.” (Govan)



Green spaces and hot weather in Scotland

Green spaces provide a range of benefits to communities, including improved air quality, reduced noise, and opportunities for physical activity and social interaction. However, green spaces can also experience higher temperatures than surrounding urban areas, particularly during hot weather. This poster explores the challenges of managing green spaces in Scotland during hot weather and provides practical advice for residents and community groups.

Key points:

- Green spaces can experience higher temperatures than surrounding urban areas.
- Hot weather can impact the health and safety of people using green spaces.
- Community groups can help to manage green spaces during hot weather by providing shade, water, and first aid.
- Local authorities can help to manage green spaces during hot weather by providing shade, water, and first aid.

Urban greening for heat-resilient neighbourhoods

Urban greening is a key strategy for creating heat-resilient neighbourhoods. This poster explores the benefits of urban greening and provides practical advice for residents and community groups. It also includes information about local authorities and other organisations that can help to support urban greening projects.

Key points:

- Urban greening can help to reduce the urban heat island effect.
- Urban greening can improve air quality and reduce noise.
- Urban greening can provide opportunities for physical activity and social interaction.
- Local authorities can help to support urban greening projects by providing funding and advice.

EXIT

POLLOK
COMMUNITY
CENTRE

Pollok evidence café, November 2024



Govan evidence café, April 2025

Green spaces for heat-resilient neighbourhoods in Glasgow

Govan and Pollok community research report



MDR3
MDR3 Program in
Disaster Risk Reduction
and Resilience (MDR3)

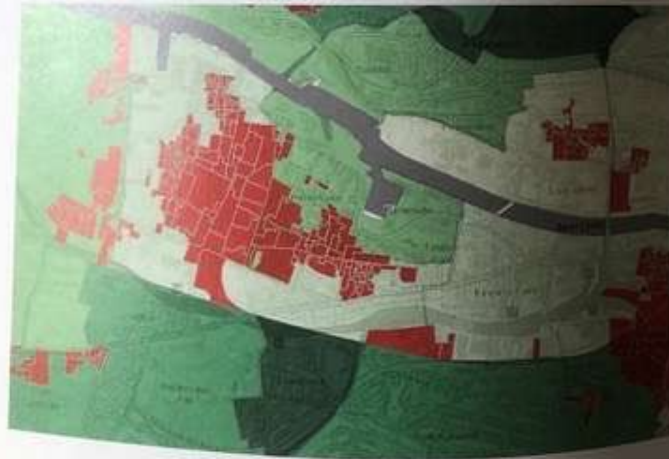


James Hutton Institute in 2014⁸ classified Govan as being characterised by having less green, fewer gardens and average public space.

Figure 2.1.3.: urban tree canopy cover by neighbourhood (source: Climate Ready Clyde)



Figure 2.1.4.: urban tree canopy cover and heat risk overlaid by neighbourhood and postcode area (source: Climate Ready Clyde)



⁸ <https://www.hutton.ac.uk/sites/default/files/files/projects/GreenHealth-Final-Report.pdf>

2.2. Green spaces and heat in Pollok

Figure 2.2.1.: green space types in Pollok



Figure 2.2.1.: shows some of the green space types in Pollok. Climate Ready Clyde's Climate Vulnerability Map¹⁰ identifies the greater Pollok area as containing several priority postcodes for action on heat risk, fewer than Govan but still a notable number.

Figure 2.2.2.: Climate Ready Clyde priority postcodes for heat risk in Pollok area (source: Climate Ready Clyde)



Climate Ready Clyde also identify that Pollok generally has a higher percentage of urban tree canopy cover than Govan. Research undertaken by the James Hutton Institute in

¹⁰ <https://climatereadyclde.org.uk/climate-vulnerability-map/>

4.6. Creative outputs

As part of the community research process, we worked with arts-based organisations in each neighbourhood. In Pollok, this was the Village Storytelling Centre and illustrator Jillian Mendoza. In Govan, we worked with Impact Arts and the Craft Café in particular, as well as Gilded Lily and GalGael, to develop more creative outputs. Our outputs took the form of drawings and collages, which gave a richer sense of what nature meant to people who live in, work in and visit the two neighbourhoods, and how it supports their wellbeing and resilience. A selection of these images are shown below:

Figure 4.1.: example creative outputs from creative workshops in Govan



Figure 4.2.: posters created by Jillian Mendoza based on findings of community research in Pollok





Posters created by Jillian Mendoza based on findings of community research in Pollok, launched at Pollok Evidence Café on urban greening for heat resilience in November 2024.



Zine created by community researchers and community groups based on findings of community research in Govan, launched at Pollok Evidence Café on urban greening for heat resilience in April 2025.



What does all this say about resilience to urban heat?

- Residents in both Glasgow and Taipei already experiencing effects of heat, and greening one of many adaptation strategies they draw on;
- Especially in Glasgow, urban nature supports resilience in the broader sense of community connectivity, organisation and wellbeing, rather than just cooling;
- Residents in both cities **very** aware of justice questions around ownership of and access to land, and how this affects climate impacts and decisions.

What next? What needs to happen for community heat resilience via nature?

- Explore collaborative models for local authorities and communities to work together on lighting and litter: these seem parochial, but matter to residents;
- Explore alternative funding models that can sustain community-level projects to build climate resilience, and extend beyond project- or grant-based funds;
- Identify and develop demonstration garden to build stewardship in climate-resilient species.



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<https://www5.open.ac.uk/research-projects/urban-greening/>



Read our community reports:

Glasgow report:

<https://oro.open.ac.uk/107308/>

Govan-specific report (1 focal neighbourhood in Glasgow with specific heat and governance challenges):

<https://oro.open.ac.uk/107309/>

And our perspective piece:

<https://doi.org/10.1186/s42854-023-00057-9>

<https://www5.open.ac.uk/research-projects/urban-greening/>

