**Urban GreenUP**

**Liverpool, Britain**

**Liverpool City Council, Mersey Forest, University of Liverpool and other consultants**

## BIG Biodiversity Challenge Award Category: Innovation Award

**Project overview (50 words max)**
URBAN GreenUP, (2017-2023) was a pioneering environmental research project, retrofitting 40+ nature-based solutions in wildlife depleted areas of Liverpool. The project outcomes improved air quality, reduced localised flooding, reduced temperatures, enhanced biodiversity, stored carbon, and increased active travel. Legacy projects disseminated learnings globally, advocating for widespread adoption of nature-based solutions.

**What were the biodiversity conditions on site prior to the enhancement? (100 words max)**
Liverpool has the fourth-highest surface water flood risk in the UK, compounded by just 1.43% tree cover in the city centre, leading to heat stress and UV exposure. Air quality breaches AQI and WHO safety limits annually, endangering people with lung conditions and contributing to 279 deaths. Green spaces are sparse and of low quality, causing low activity levels, poor mental health, cardiovascular disease, obesity, and reduced life expectancy. The area is dominated by cars, prone to flooding, and lacks climate resilience. The goal was to showcase the potential of retrofitting nature-based solutions in urban areas, inspiring similar efforts in other cities.

**What were the reasons behind this project? (100 words max)**
The Urban GreenUP project was funded under an EU Horizon 2020 Programme with the objective to develop, apply and replicate Renaturing Urban Plans to mitigate the effects of climate change. Demonstrator sites and NbS interventions were selected using an intelligence-based approach, with GIS models highlighting suitable NbS locations by considering city areas most at risk from climate change risks.
The interventions were delivered and monitored in partnership between Liverpool City Council, Mersey Forest, The University of Liverpool and a multitude of organisations, and community groups to ensure long-term success and improve city resilience.



*Pioneering salt water ecosystem island with underwater habitat*



*Flame torch to kill grass, Tree SUDS, Biodiverse Pollinator Plantings*

**What were the biodiversity measures taken?** (300 words max)
Measures included retrofitting streets, parks, docks, rooves, shopping centres, and car parks with NbS for water quality improvement, flooding, shading, cooling, pollinators, and wildlife habitats. The project installed floating ecosystem islands in ponds and docks, transformed grass verges and wasteland into pollinator corridors, created a food bank allotment, and ran public engagement activities including forest bathing pods, wellbeing activities, and volunteer planting.

GreenUP planted 100,000 trees and shrubs across the city and installed green walls and a green roof on poorly insulated buildings. This reduced air surface temperatures by upto 7.2℃, provided shade /cooling along active travel routes, and reduced potential for heat-related illnesses.
Monitored and modelled data shows that the biodiverse plantings locally improved air quality (reductions in $NOX_2$ and particulate matter) saving 26 lives/year. Tree SuDS and raingardens prevented buildings, roads and footpaths from flooding, improved discharge water quality, irrigated trees, protected residents from flood-related respiratory conditions.

GreenUP planted active travel and wildlife corridors with trees and created habitat stepping-stones, including floating islands, green rooves/walls, and wildlife rich pollinator verges. As a result, pollinator numbers increased by up to 930%, walking increased by 13.9%. Participants in GreenUP's events reported an 18% increase in activity levels, improved physical/mental wellbeing, increased volunteer activity and better connections to nature. Has inspired changes in landscape management practices, including low carbon, no herbicide techniques that promote biodiversity and planting schemes which halved the usual associated embodied and operational carbon.

The learning from retrofitting climate resilience into cities is being used to develop new Liverpool council policies. The tangible outputs are available open-source via an online portal.
https://www.urbangreenup.eu/resources/
The portal includes NbS selection tools for decision-makers and funders, an evidence base of the environmental, social and economic benefits of NbS, and published scientific research papers on NbS.



*Nurture Nature community engagement, training and ongoing management of Pollinator Plantings*



*Forest Bathing pods, Smart pollinator pillars to link sites*

GreenUP has transformed tired overheating buildings, monoculture grass verges, flooded grey pavements and saltwater docks into a climate-resilient network of habitat and active travel corridors through the most nature-depleted and climate-vulnerable areas of the city.  *Measured data demonstrates:*

- Interventions have increased pollinators by 930%
- NbS have provided shading, reduced urban heat island and reduced air surface temperatures by upto 7.2$^{o}$C
- NbS have diverted 5,200,000 litres of water from sewers, reducing flooding on Pitt Street & at Otterspool Park
- Floating ecosystem islands have reduced toxic algal blooms
- An increase in walking of 13.9% along new attractive accessible routes.
- Increased footfall past local shops with 92% of business owners recognising the benefit of GreenUP's nature enriched, biodiverse plantings.

*Modelled data (GI VAL calculator/ECoservR). predicts:*

- The creation of 52 FTE tourism and land management jobs
- Enhanced access to local green space for 500,000 residents,
- Collectively, increased walking and cleaner air have led to more active lifestyles, saving 26 lives annually.
- Improved views of greenspace for more residents

The community has taken ownership of pollinator plantings, with 70 residents volunteering annually. McDonalds staff clear litter every day and local residents weed every 2 months. GreenUP's physical, education and mental health programmes have enhanced feelings of wellbeing and promoted a 30% increase in exercise amongst participants. Partnering with LJMU's Eco-Inventory Unit to rethink standard landscape practice, we have used their carbon data to develop a carbon mitigation hierarchy and materials and procurement strategy.

**Project Team**
- Client - Urban GreenUP,  Liverpool City Council, Mersey Forest, University of Liverpool
- Designers-Flavia Goldsworthy, reShaped for Pollinator Planting (+ several consultants for Urban GreenUP Initiatives)
- Volunteers - Good Gym, Faith for change, McDonalds, Liverpool architecture foundation, Friends of Sefton Park

**What was the motivation for carrying out the enhancement?** (100 words max)

The motivation for these enhancements was to devise, implement, and validate a methodology aimed at revitalising urban landscapes to mitigate the impacts of climate change, enhance air quality and water management, and bolster the city's resilience through innovative nature-based solutions. This initiative catalysed a profound transformation of nature-depleted urban areas into biodiverse-rich sanctuaries for both human inhabitants and wildlife. It effectively heightened awareness regarding environmental preservation and underscored the importance of active community involvement in addressing climate challenges. Through rigorous knowledge dissemination and collaborative endeavours, the project has garnered notable success, effectuating substantial biodiversity enhancements across the urban expanse.



*Biodiverse plantings, Community volunteer weeding*



*Community volunteer training, Sparrow nesting area from reclaimed ducting - part of habitat nature trail, First urban city rain garden*

BIG Biodiversity Challenge and Awards 2024  |  Entry form

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