

CLIMATE RESILIENCE IN GREEN SCHOOLYARDS



Berlin-based landscape architect, Birgit Teichmann, local Canadian landscape architects and Irma Coulson Public School integrate lessons from Berlin's Sponge Schools project, designed to ensure that school grounds absorb 100% of rainfall while mitigating flood risks.

WHAT IS A GREEN SCHOOLYARD? [Green schoolyards](#) are nature-filled, multi-functional school grounds designed for and by the entire school community that include places for students, teachers, parents and community members to play, learn, explore and grow. During out-of-school time, these schoolyards remain available for community use.

INTRODUCTION

Regular access to playing and learning in high-quality greenspace has been proven to help children achieve their full academic and social-emotional potential. Many communities are exploring green schoolyards as a strategy to increase educational and health equity as well as transform spaces into climate resilient, enriching outdoor areas for children and community.

Focusing climate resilience efforts at sites where children frequent on a regular basis, such as schoolyards, provide direct benefits to children against climate events. Focusing on the needs of children is especially important as they are considered [a high-risk population](#) when exposed to climate events such as extreme heat, air pollution and flooding. Across the county, dark asphalt schoolyards exacerbate urban heat islands and increase stormwater runoff. Since school districts are frequently significant owners of land in a municipality, green schoolyards serve as an excellent site for both local and, when aligned with wider community efforts, city- and region-wide climate resilience. Green schoolyards promote community resilience, health and wellness, and improved learning. They also bolster water management and biodiversity, reduce urban heat islands and improve environmental literacy. The following recommendations are for new communities looking to uncover existing climate resilient, green schoolyard initiatives, and are not exhaustive of current accomplishments across the country.

GREEN SCHOOLYARD POLICIES, PLANS & FINANCING TO ALIGN WITH CLIMATE GOALS

Centering green schoolyards into local and regional climate goals and policies helps to formalize their role in achieving climate resilience and helps to increase capacity to implement, fund and maintain such sites. In Austin, Texas, the City's [Outdoor Bill of Rights](#) helped solidify the commitment for children's right to play, learn and grow in nature. This effort, coupled with the Austin Independent School District's [sustainability plan](#), created an organized approach to implementing green schoolyards across the district. The [Atlanta Community School Parks](#) initiative delivers outdoor equity across the city, working to increase greenspace, replace asphalt with sustainable and more resilient surfacing alternatives, and expand nature and play access for all community members. This, coupled with a formalized [joint use agreement](#) between the city and school district demonstrates how policy alignment helps to expand schoolyard access. The agreement also promotes co-investment of maintenance for nature-based schoolyards, signaling long-term support for climate-resilient schoolyard solutions.

Communities may consider aligning green schoolyards initiatives with city-wide creative funding initiatives. Many green schoolyards are funded in partnership with agencies directly responsible for stormwater management or climate resilience plans. Building partnerships is key in order to create success. Getting in sync with local school districts, for example, can better align projects with regular facility update cycles so that green schoolyard development happens alongside regular building improvements. The City of Milwaukee's [Green Infrastructure Plan](#) prioritizes collaboration with Milwaukee Public Schools to incorporate green infrastructure and green stormwater across schoolyards. Through Green Solutions funding available from the Milwaukee Metropolitan Sewerage District, the school district receives at least \$600,000 annually to support projects and a Sustainability Specialist position. In Grand Rapids, Michigan, a partnership between the city and school district created the opportunity to establish a [dedicated tax](#) for capital investment projects to build city parks. Since its creation, the school district has been able to support the implementation of green schoolyards and nature playscapes. For more information about addressing financing for green schoolyards, check out our [Green Schoolyards Toolkit](#).

GREEN INFRASTRUCTURE & NATURE-BASED UPGRADES

Green infrastructure and nature-based solutions provide several opportunities to improve climate resilience at schoolyards:

- Increasing **built** (e.g., pergolas, pavilions, shade sails) and **natural shade** (e.g., shade trees) can help reduce children's heat exposure in play areas.
- Planting **trees and other vegetation** (e.g., bushes, shrubs, tall grasses) at sites can [help to reduce](#) local heat islands, improve air quality, provide green stormwater management, improve human health and comfort and reduce energy use. Transforming schoolyards can also help to improve local wildlife habitat and increase biodiversity, which helps communities become more resilient to climate impacts.

- **Native bushes, shrubs and tall grass** are well-adapted and typically have a robust root system, which increases the rate of water infiltration into the soil, reducing flooding.
- Choosing [fire-safe plants](#) and following the landscape principles of [defensible space](#), which is a buffer zone to slow fire spread, can help protect the school from fires and promote larger community resilience to wildfire.
- Schoolyards are also great sites for **green stormwater interventions**, such as rain gardens, bioswales, permeable pavements, tree plantings and native plant gardens. Such strategies help to reduce flooding and pollution as well as cool the local environment and create educational, interactive spaces for children and community members.

The Metropolitan Water Reclamation District of Greater Chicago partners several city departments through [Space to Grow](#), which prioritizes green infrastructure and stormwater upgrades in low-income communities. By capturing the water, storing it on-site and allowing it to soak into underlying soil, the 34 schoolyards each capture more than [192,000 gallons of stormwater](#) every time it rains. The program also targets asphalt conversion to help reduce urban heat islands and cool green schoolyards through expansion of greenspace. Additional non-environmental benefits include positive impacts on student health, an increase in community engagement and enhanced academic opportunities.

CLIMATE RESILIENCE STRATEGIES & ENGAGING THE COMMUNITY

Engaging children and youth in creating ties between green schoolyards and climate resilience helps to promote environmental stewardship, instill a sense of ownership, strengthen ongoing neighborhood support for green schoolyards and helps improve climate resilience education. In Brooklyn, New York, the city and school district's collaboration with The Trust for Public Land's [Green Community Schoolyards](#) education initiative works to establish new green schoolyards. Climate science and stormwater management was incorporated into school curricula, allowing children to learn about the critical components of green schoolyards that help promote climate resilience. The lessons inform children as they engage in the co-creation of new schoolyard designs. Green Schoolyards America also uses [hands-on, place-based learning](#) to help teach children about the ways in which building materials impact comfort, health and urban heat islands. After learning how to study schools on hot days, students help to propose design solutions for their own green schoolyards.

Education occurs both during the design process as well as after construction. Rain barrels and gardens that help with urban heat reductions and stormwater management can act as education sites for food-based learning. Shade trees that bear native, edible fruit can provide shaded comfort while improving local food systems and offering education opportunities for children and their families. Finally, native plants used to improve biodiversity and increase resilience against wildfires can allow children to learn about local ecosystems, animals and insects that rely on the plants to survive and thrive.

TOOLS & RESOURCES

- [Green Schoolyards for Healthy Communities](#), The Children & Nature Network
- [Green Schoolyard Design Feature Gallery](#), The Children & Nature Network
- [Green Schoolyards Advocacy Toolkit](#), The Children & Nature Network
- [Green Schoolyards America](#)
- [Smart Surfaces Policy Tracker](#), Smart Surfaces Coalition