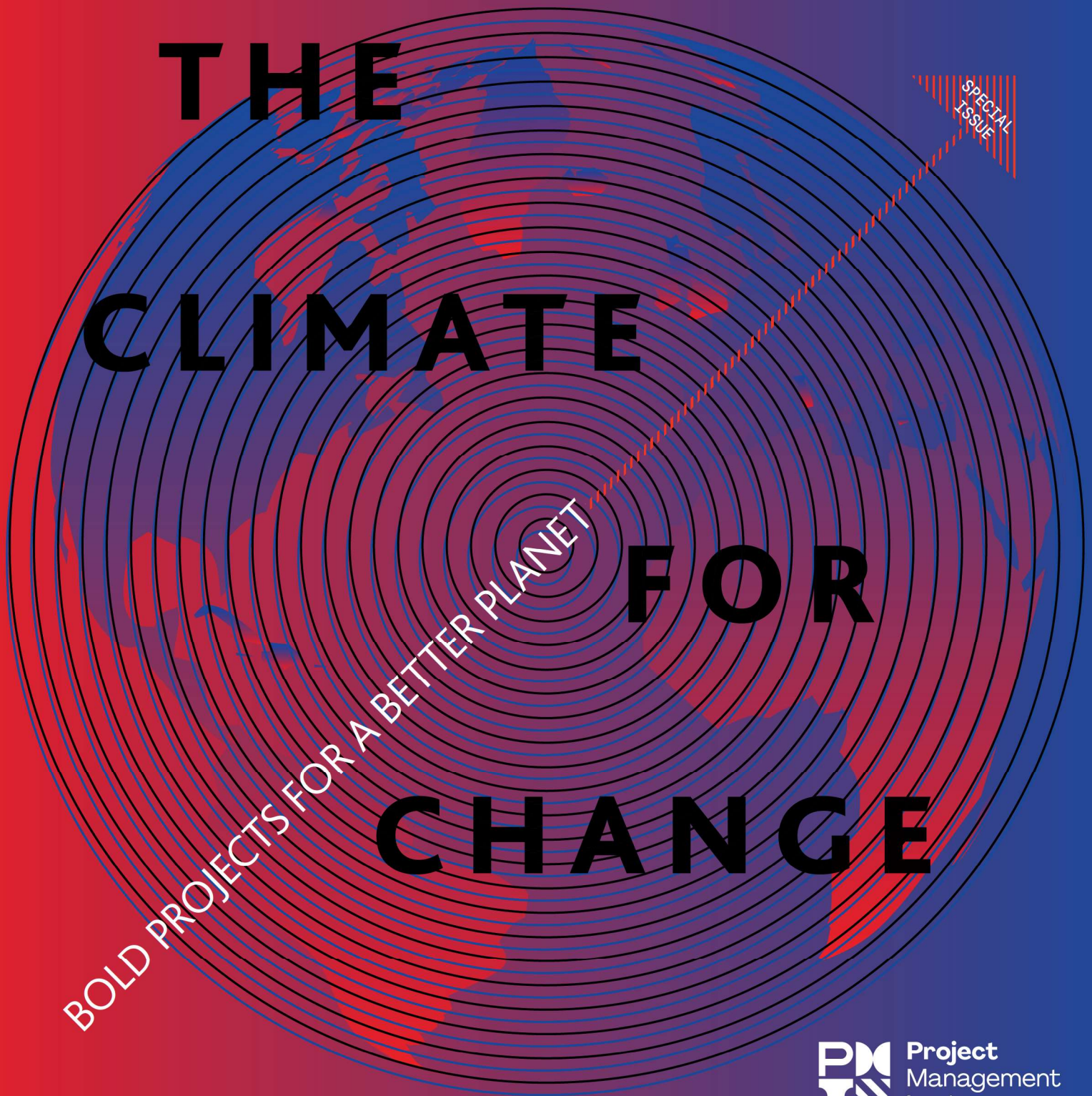
MAY/JUNE 2020 VOLUME 34, NUMBER 4

PMNetwork®

SPECIAL ISSUE

THE CLIMATE FOR CHANGE

BOLD PROJECTS FOR A BETTER PLANET



Project Management Institute.

Green Light

The path ahead for public transportation: Bikes, buses and trains—but with twists.

BY AMBREEN ALI

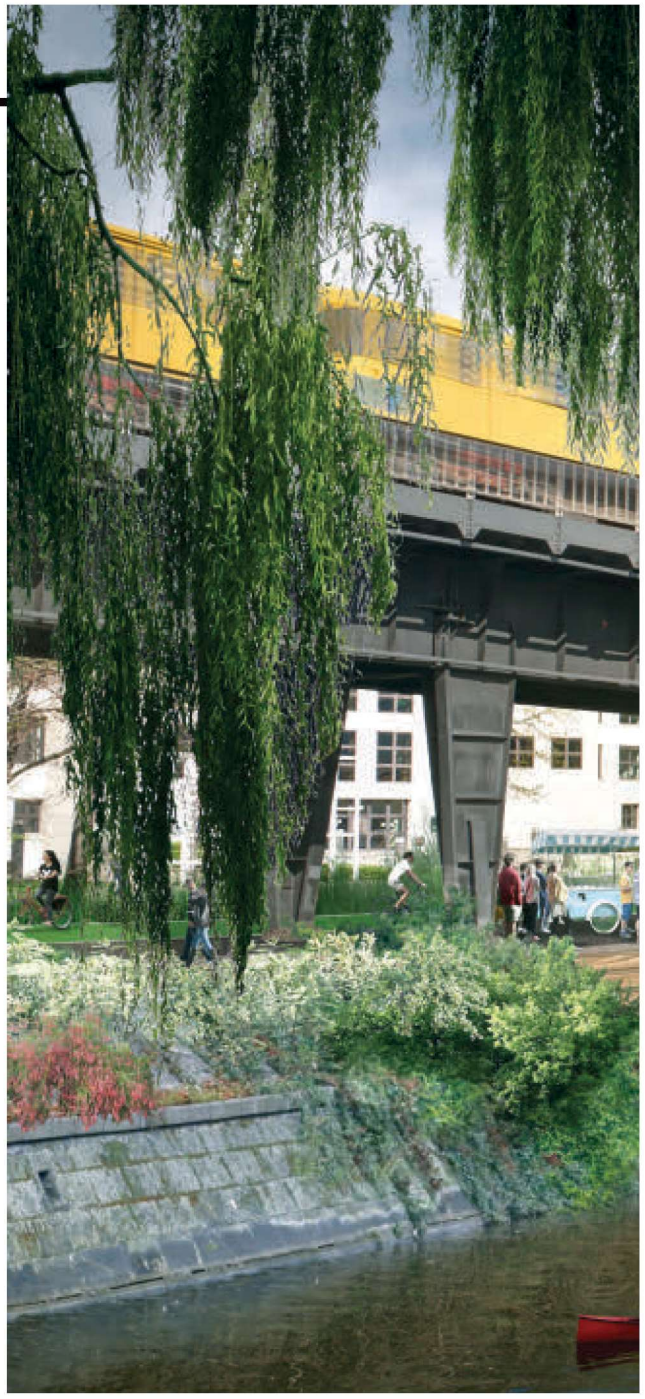
The environmental goal of public transportation projects used to be simple: Get people to give up their gas-guzzling, carbon-spewing cars.

But as cities reinvent their transportation infrastructure, teams are rethinking how the very systems that allow people to ditch their personal vehicles can also dramatically reduce greenhouse gas emissions. And with transportation generating 14 percent of all carbon dioxide emissions, the race to develop cleaner ways to get around is heating up.

Some projects are updating existing systems, such as shifting to electric bus fleets in China, Singapore and Indonesia. Other teams are building new infrastructure, like the fully autonomous, 4.2-kilometer (2.6-mile) metro train line in New Delhi, India that was completed last year. It includes stations built with solar panels.

The road can get bumpy for teams. In San Diego, California, USA, efforts to create a 70-mile (113-kilometer) network of new bike paths fell a year behind schedule and US$79 million over budget in part because of concerns from the public that it would increase conventional traffic congestion and limit street parking. To secure additional funding, project sponsor San Diego Association of Governments is countering with strong stakeholder engagement, showing skeptical residents how the bikeways would not only reduce vehicle emissions, but also cut down noise as well as brake and tire dust by encouraging the use of bicycles for short trips.

Three other initiatives demonstrate how teams delivering innovative transportation solutions can redefine their impact on the Earth.



BERLIN, GERMANY

Pedal Power: Testing the Limi

The Autobahn is about to get some competition as Berlin aims to become a destination spot for cyclists. The city's Radbahn is a protected bike path that would transform space under a 9-kilometer (5.6-mile) stretch of the elevated metro line. The Senate of Berlin will conduct a feasibility study, and the pilot project has received €3.3 million in public funds to build out the first 150 to 200 meters (492 to 656 feet) by 2022. The test route will help win support and funding to build the entire bike path, which would shade riders

ts of Bike Lanes

from the elements and offer path-side amenities such as charging stations for electric bikes.

The goal of the pilot path is "to see how it really looks and feels and start testing different materials such as pavement and lighting," says Perttu Ratilainen, co-founder, Radbahn, Berlin, Germany. It will also help the team identify and mitigate risks, including public reaction and safety issues, he says. "The idea is to experiment with the space and give our stakeholders an opportunity to participate in the project and express their views on the outcome."

The entire project will require an estimated €30 million and will focus on sustainability from the onset, Mr. Ratilainen says. For example, the team is looking to use a mix of recycled plastic and concrete for surface material, which has been used successfully for bike lane projects in the Netherlands.

"Berlin is still missing, from our perspective, an exciting, inspirational biking project that can be part of its landmark character," he says. "We would like to see this project having this characteristic of inspiring other cities to follow."

JAKARTA, INDONESIA

Recharged: A Signature BRT Line Goes Electric

"There are bound to be hurdles, but we've seen strong political support for the transition."

—Bert Fabian, United Nations Environment Programme, Bangkok, Thailand

The country's largest city is home to the world's longest bus rapid transit (BRT) line at 244 kilometers (152 miles). Although about 200 million people ride the 16-year-old Transjakarta system each year, the diesel-powered buses are taking a toll on the environment. In response to public protests over the level of air pollution the BRT system generates, Transjakarta has launched a project to electrify the entire fleet.

"Many public transportation vehicles run on diesel, which is generally of low quality in Indonesia and contributes to bad air," says Bert Fabian, program officer for the Air Quality and Mobility Unit of the United Nations Environment Programme, Bangkok, Thailand. "By converting the bus fleet to electric power, Transjakarta is helping to remove these contributors from the air pollution equation."

With an estimated 425,000 e-buses around the globe, China is outpacing all others with 421,000 on the road. But while China has been able to electrify the bus lines in its new cities with relative ease, converting existing bus infrastructure in congested cities with entrenched bureaucracies poses an entirely different challenge.

Mr. Fabian's organization is helping mobilize funding for the project while also providing technical advice to Transjakarta and the Indonesian government. Testing new electric buses from multiple manufacturers hit a speed bump in June 2019, when the Indonesian government did not have the devices it needed to test batteries and wasn't able to issue vehicle registration certificates for buses to be tested on BRT routes. Transjakarta solved the problem and avoided costly delays by moving the tests to other approved public roads. People were prohibited from riding those test buses, so the team filled the buses with large containers of water to simulate the weight of passengers.

The biggest unresolved challenge involves determining whether to place charging stations throughout the BRT route or to build a central site for charging. But Mr. Fabian is confident that the technical assistance project will ultimately be completed on time and on budget—and deliver long-term environmental benefits. That optimism is also fueled by buy-in from the governor, who vows to make Jakarta one of the most sustainable cities in the world, Mr. Fabian says.

"On a project as ambitious as this, there are bound to be hurdles," he says. "But we've seen strong political support for the transition."

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PHOTO COURTESY OF SOUND TRANSIT

SEATTLE, WASHINGTON, USA

Light Rail: Heavy Lifting Requires Sustainable Focus

The marathon project to finish a sprawling light rail system in one of the fastest-growing metropolitan areas in the United States isn't just about creating a better public transportation system. The team that's expanding the Sound Transit system, which is slated to cover 116 miles (186.6 kilometers) by its completion in 2041, is doing it in a way that delivers next-level sustainability in a region with a reputation for protecting the planet.

All facilities and large train stations are being built with LEED Silver standards, according to Amy Shatzkin, deputy director for sustainability, office of environmental affairs and sustainability, Sound Transit, Seattle. The team is also working with the Institute for Sustainable Infrastructure to pilot a rating system for green infrastructure on its large corridor projects.

"This standard ensures that we implement an integrated design process that includes environmental mitigation, resource efficiency, community outreach and resilience to climate change as part and parcel of project planning, design and construction," says Ms. Shatzkin.

Sound Transit project leaders require contractors to assign a sustainability lead and to create a sustainability performance plan within 90 days of the contract execution, both of which outline how they are going to meet sustainability requirements. On large capital projects, a sustainability planner monitors the development of scopes of work and all related procurement documents. The planners also lead monthly coordinating meetings with team members, including environmental planners and civil engineers.

The environmental focus extends to day-to-day project tasks, too. For example, the team must restrict high-pollutant diesel equipment and vehicles from construction sites, conduct climate vulnerability analyses on all projects and adjust engineering approaches as a result. It has even added on-site renewable energy production to some sites.

"It really is time to build the transit system necessary to address a growing region and its needs," says Ms. Shatzkin. "This is getting people out of cars and into a much better, more efficient and lower carbon-footprint system." **PM**

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—Amy Shatzkin, Sound Transit, Seattle, Washington, USA