

Bringing Global Innovations to United States Highways Through FHWA's Global Benchmarking Program



U.S. Department of Transportation
Federal Highway Administration

Office of International Programs

The Office of International Programs works to access, promote, and disseminate global best practices and technical innovations to ensure a safe and efficient United States highway transportation system.

ORIGINS

Since 1991, the Federal Highway Administration's (FHWA) Global Benchmarking Program (GBP) has conducted studies that seek out the world's best highway innovations and bring them to the United States. The GBP has been instrumental in documenting and promoting transportation agency management practices such as performance measures, asset management, and risk management, which benefit travelers on the Nation's highway system (see Figure 1).

The GBP has influenced numerous advances such as self-propelled mobile transporters that lift entire bridges into place in hours, not months; warm-mix asphalt that lessens energy consumption, reduces the cost of paving, and produces less greenhouse gas emissions; and safety innovations, including crash-reducing roundabouts, pedestrian-protecting traffic-calming approaches, and proactive Road Safety Audits that reduce roadway deaths.

THE GBP METHODOLOGY

The GBP methodology is based on the formation of teams comprising United States Federal, State, and local subject matter experts that conduct focused study missions to countries with valuable information in a particular subject area, allowing participants to observe innovations first-hand and engage in face-to-face, in-depth exchange with foreign counterparts.

Study proposals are generated by FHWA's core program offices, address topics of high interest to the United States transportation community, support FHWA's priorities and goals, and are vetted through an established risk analysis and evaluation process. Approximately two GBP studies are selected by the FHWA Administrator each year.

Each study team has two FHWA representatives, two State department of transportation representatives, a subject matter expert, and may also include external stakeholders (e.g., local government, private sector associations, academia representatives).

BENEFITS OF GLOBAL BENCHMARKING

- Saves research dollars by capturing mature and emerging technologies, policies, and practices.
- Accelerates improvements and increases available solutions through innovations already proven abroad.
- Fosters opportunities for technology sharing and joint research with foreign counterparts.
- Creates United States champions who will promote the innovations to their peers.
- Ensures that the United States highway system is world-class.

FIGURE 1. THE GBP STUDIES HAVE HELPED PROVIDE UNITED STATES HIGHWAY AGENCIES WITH STRATEGIES THEY CAN USE TO SPEED UP PROJECTS, REWARD INNOVATION, AND BRING PRIVATE FINANCING TO THE TABLE. **SOURCE:** FHWA



FIGURE 2. FEDERAL AND STATE SUBJECT MATTER EXPERTS FORM TEAMS TO COLLABORATE ON PROJECTS AS PART OF THE GBP. **SOURCE:** FHWA

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Teams typically visit 2–3 countries and gather findings for a comprehensive study report that is shared with the United States highway transportation community.

The GBP supports study teams with both implementation expertise and funding to accelerate early implementation activities, starting with the development of an implementation plan, which evaluates the most promising technologies and practices identified abroad; shares them with relevant organizations; and develops strategies for domestic adaption and implementation.

FUTURE IDEAS AND INNOVATIONS FOR THE GBP

The GBP is a valuable tool for identifying, accessing, evaluating, and implementing proven international innovations to address challenges. Studies currently underway include the following:

Reducing Pedestrian Fatalities and Serious Injuries Through Planning and Application of Safety Strategies on Arterial Networks

This study examines noteworthy approaches and innovations used in Australia and New Zealand to achieve reductions in pedestrian fatalities, particularly when applied to arterial roadway systems. The goal is to identify proven practices, policies, approaches, and innovations that could be applied in the United States to address increasing pedestrian fatalities and serious injuries.

Unmanned Aerial Systems (UAS) for Infrastructure

This study examines how Germany and the United Kingdom are successfully utilizing UAS technology to manage road transportation in the areas of design, construction, structural inspection, maintenance, and asset management. The goal is to leverage international experience and lessons learned to help advance the use of UAS technology for highway transportation applications in the United States.

ADVANCING UNITED STATES TECHNOLOGY AND PRACTICE

BICYCLE NETWORK PLANNING AND FACILITY DESIGN APPROACHES, THE NETHERLANDS

- Created bicycle and pedestrian networks that eliminate negative user behavior through design.
- Aligned with Dutch principles of seamless movement, trust in users, designing for behavior, and prioritizing network connectivity.

BUILDING INFORMATION MODELING (BIM) FOR INFRASTRUCTURE

- Connected data to be readily and reliably available across phases of built infrastructure.
- Validated FHWA's existing and planned efforts to promote BIM for infrastructure in the United States.
- Addressed challenges related to data standardization, interoperability, and identifying needs at each phase of the infrastructure life cycle.

ELECTRICALLY ISOLATED TENDONS (EITs) IN EUROPEAN TRANSPORTATION STRUCTURES

- Adapted practices from Italy and Switzerland to use EITs as a non-destructive evaluation technology for post-tensioned bridge structures.
- Provided lessons for durability, implementation, and maintenance in the United States.
- Fostered formal collaboration between the United States and Switzerland to advance technologies and practices that improve the resiliency of concrete bridges.

TUNNEL FIRE PROTECTION USING FIXED FIREFIGHTING SYSTEMS (FFFS)

- Confirmed the effectiveness of FFFS as an effective method for tunnel firefighting vs. traditional methods.
- Fostered relationships to broaden awareness of tunnel fire suppression methodologies within the road tunnel community.

FIGURE 3. THE GBP APPLIES TECHNOLOGIES AND PRACTICES FROM AROUND THE WORLD THAT HELP SAVE TIME, MONEY, AND LIVES AS SHOWN BY THE ABOVE HIGHLIGHTED KEY STUDIES AND OUTCOMES. **SOURCE:** FHWA