



Building better roads

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Global challenges in the pavement industry



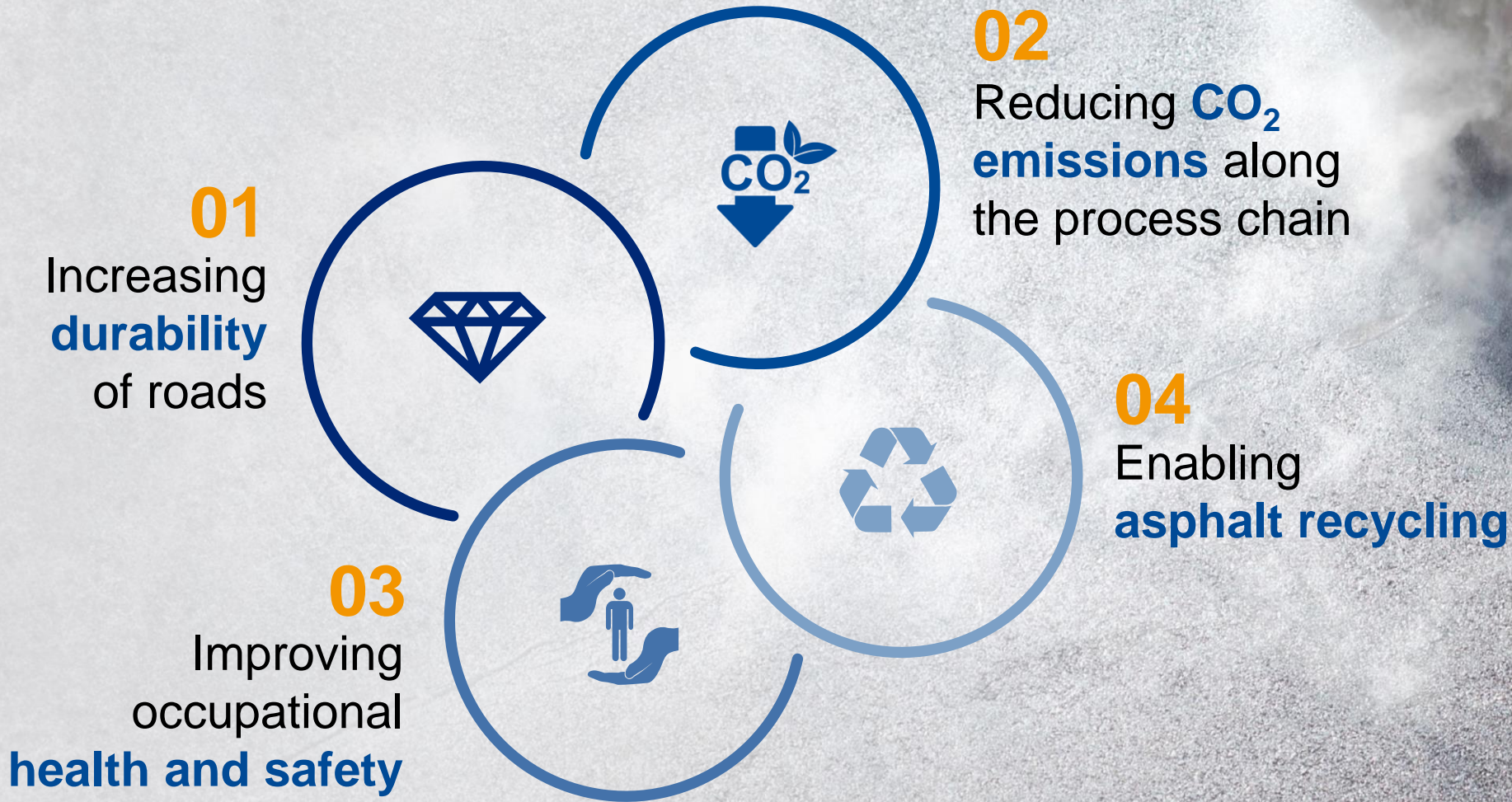
Increasing **heavy-load traffic** so that road surfaces are subjected to ever-higher stresses

Extreme weather conditions because of climate change

High **cost pressure** while strict specification and lifetime guarantees apply

Changing **legislation** with regard to sustainability and work safety

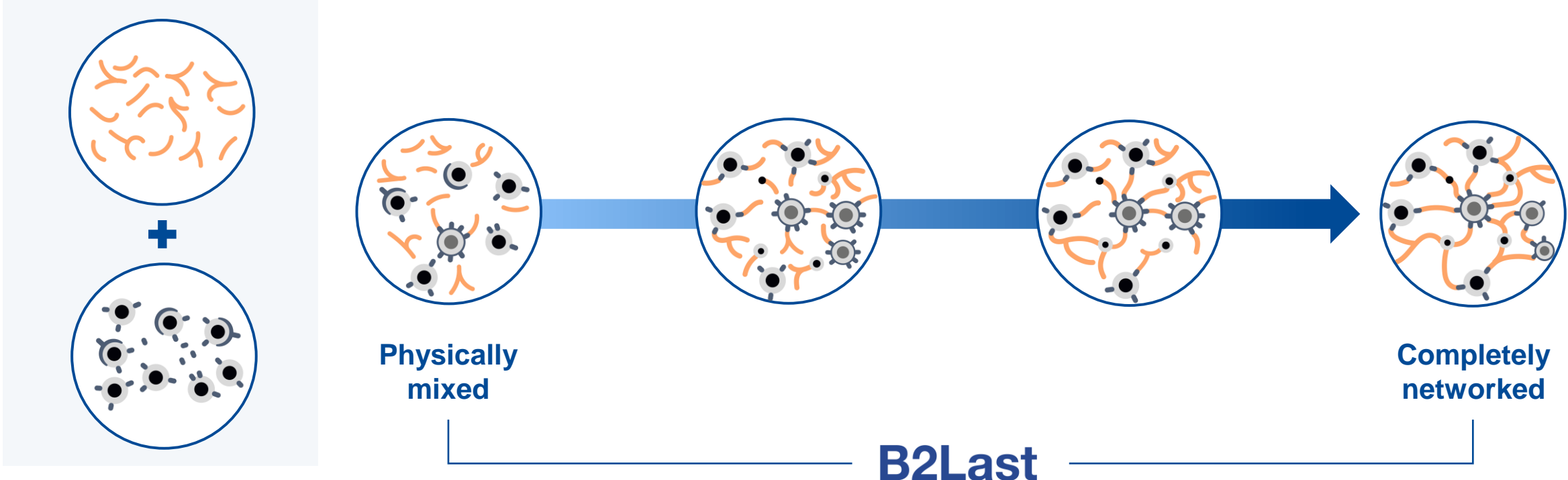
What is needed to meet these challenges?






Idea: Reactive additive leads to a chemical network

B2Last® is a reactive isocyanate mixture that cross-links bitumen components to form a polymeric network that improves elastic properties. This leads to excellent durability and improved crack resistance across a wide range of temperatures.

Chemical reaction over time



-  Bitumen polar phase bearing reactive groups
-  Bitumen from Reclaimed Asphalt Pavement (RAP) with more reactive groups
-  B2Last and resulting polymeric network

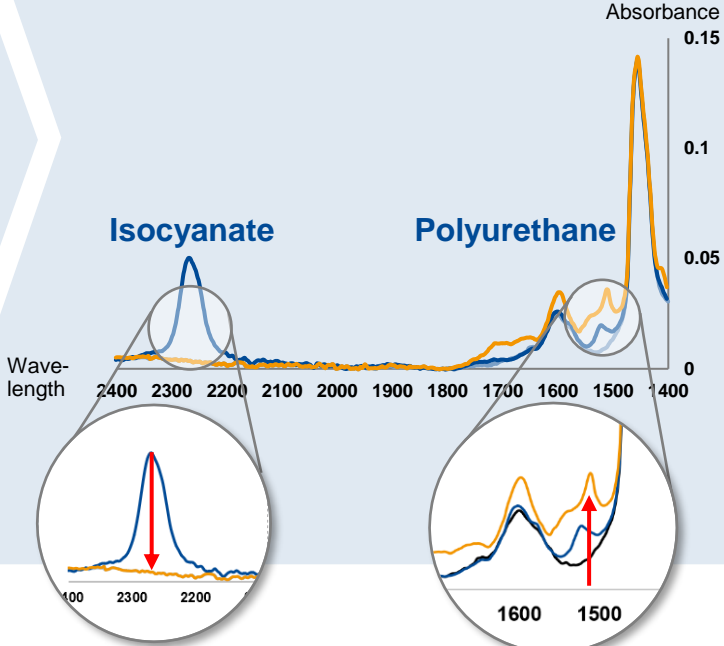
Chemical reaction know-how and analytic capabilities allow optimization of B2Last formulation

BASF optimizes chemical reaction of bitumen with B2Last



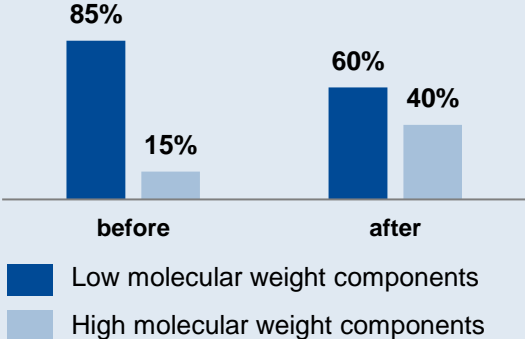
BASF used analytical tools to prove the network formation

Measurements on a **molecular level**, e.g., infrared spectroscopy (IR), prove that isocyanate reacts with bitumen functional groups to form polyurethane (PU) linkages



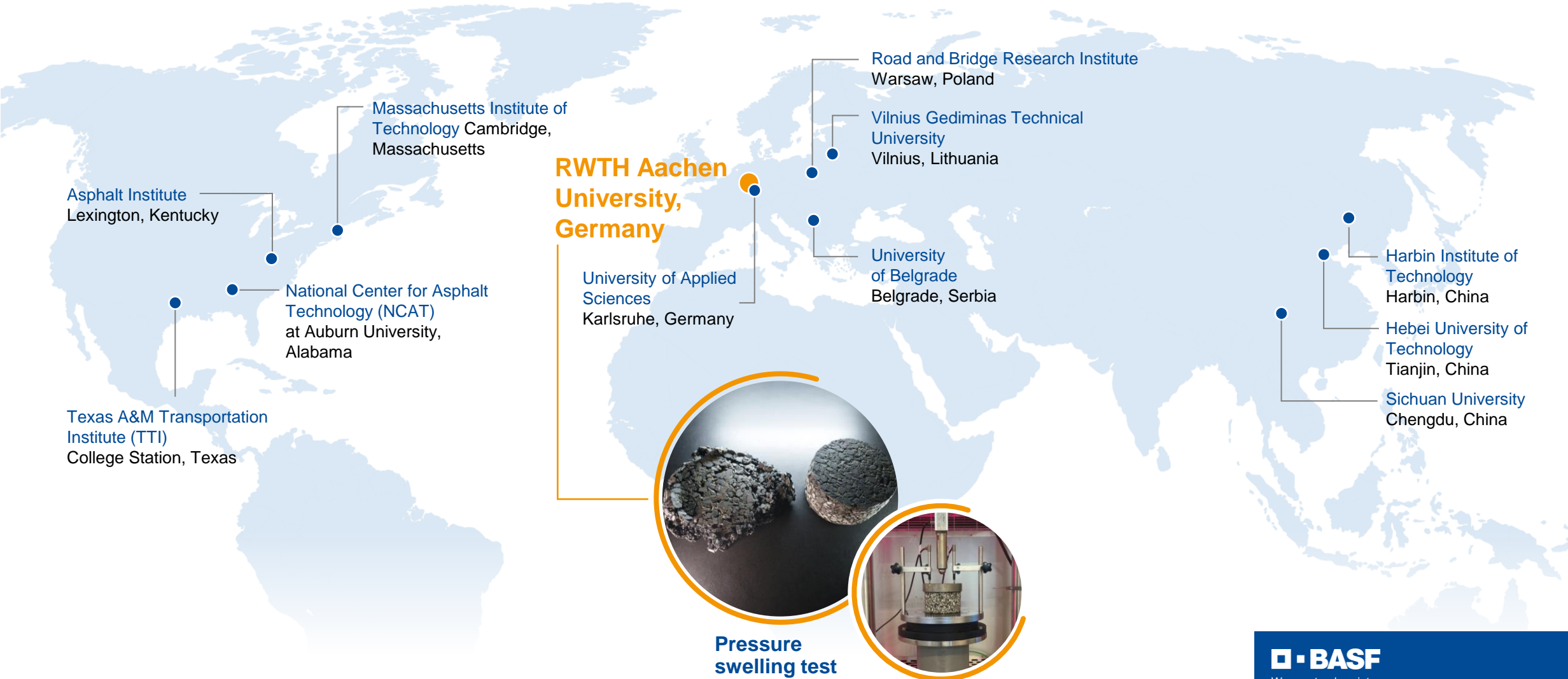
Measurements on a **macroscopic level**, like analytical ultracentrifugation (AUC) and rheological tests, prove cross-linking that leads to larger (heavier) molecular structures

Modification with B2Last



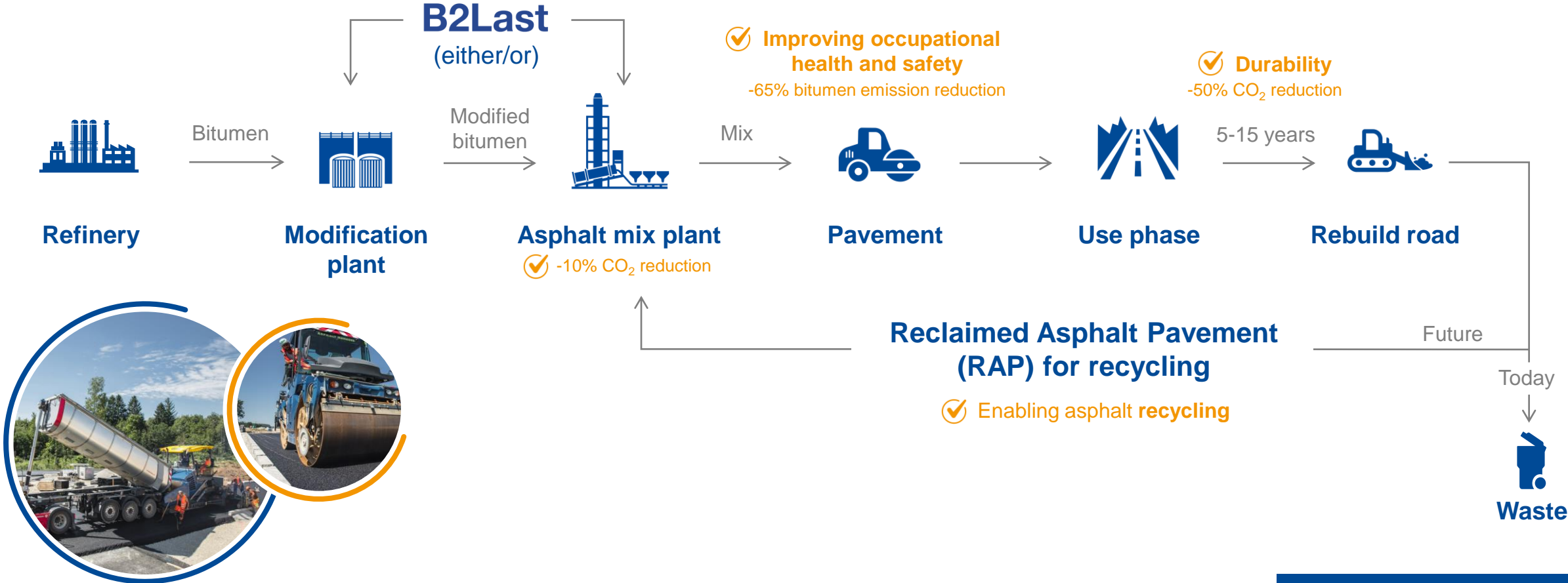
Result
BASF analytics confirms cross-linking and supports improvement of B2Last formulation

Co-creation with our global external partner network is essential to link chemistry to road performance



Fit for future needs

B2Last offers solutions along the process chain to address global challenges in the pavement industry



B2Last has been successfully tested under real-life conditions

Global rollout:
Launched in **North America** and **Europe**, **China** ongoing, **South America** and **India** under evaluation.

B2Last is also in use at our sites in **Ludwigshafen**, **Southfield** and **Zhanjiang**.

Building better roads

1 B2Last extends the durability and increases the road lifetime

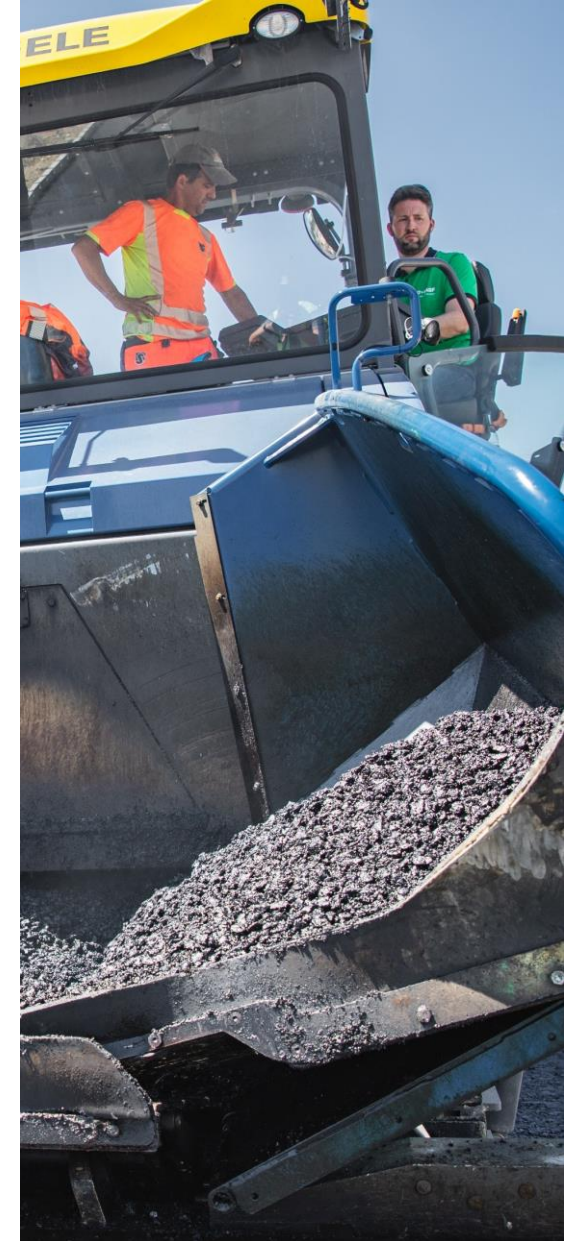
2 Less energy is needed for heating bitumen, aggregates and reclaimed asphalt, resulting in lower CO₂ emissions

3 Reduces harmful emissions along the value chain, especially during paving

4 Enables used asphalt to be recycled into new road pavement

5 Implementation of a fundamentally new additive in road construction needs co-creation with partners along the whole value chain

B2Last





We create chemistry