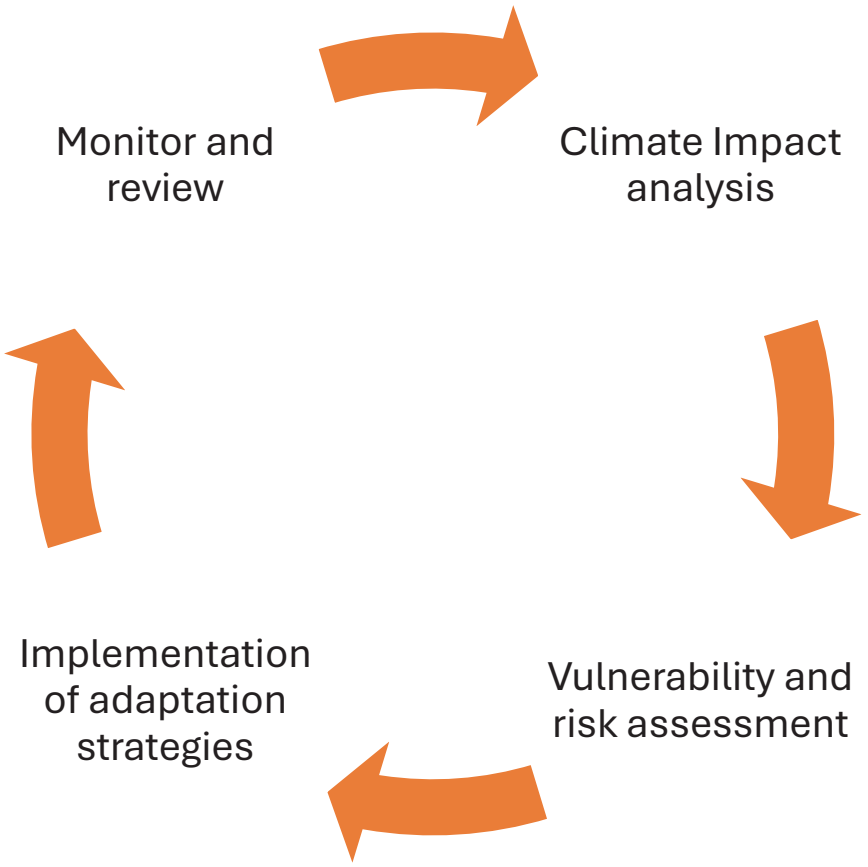
Top Tips
from UIC RERA

INTERNATIONAL UNION
OF RAILWAYS

1. Plan Adaptation in Phases

Follow a structured framework:



2. Map Climate Risks to Assets to Prioritise Investment

- Use climate projections and geospatial tools to identify vulnerable infrastructure and create risk maps for both precipitation and temperature extremes or other hazards for your geography.
- Focus adaptation efforts on assets most exposed to climate stress and have the larger impact when they fail – use vulnerability and criticality scoring to guide investment, maintenance regimes and upgrades.

3. Think outside the box on adaptation solutions

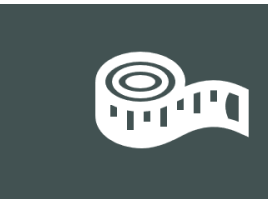
- Integrate climate risk into design standards and technical specifications for infrastructure, buildings and rolling stock including approaches for defining temperature thresholds and precipitation capacity, but it may not be possible to be prescriptive
- The best solution may not be hard engineering inside the railway boundary, consider the application of nature-based solutions and collaboration with neighbouring landowners or other stakeholders
- Don’t forget impacts on less obvious assets such as drought effects on earthworks causing subsidence and prolonged growth periods for vegetation

4. Monitor and inspection

- Deploy sensors, remote monitoring and AI tools and increase frequency and precision of inspections during rainy seasons and heatwaves for critical vulnerable assets
- Use forecasting systems and track weather patterns and asset responses in real time linked to emergency response plans.

5. Protect People and Operations

- Consider when and how you should adjust working conditions for staff
- Implement operational protocols like speed restrictions, reduced timetables and emergency response plans that are well understood by all stakeholders inside and outside of the railway workforce.
- Make clear customer and stakeholder communication during and before forecast extreme weather.



6. Use Resilience KPIs

- Develop and apply key performance measures to track your climate resilience, considering both leading and lagging indicators.
- Track progress and refine strategies based on performance data and benchmarks and use the data to demonstrate the return on investment of adaptation measures.

7. Collaborate Across organisations and Sectors

- Build partnerships between operators, infrastructure managers, other modes of transport, energy sector actors, local authorities and policymakers for better planning and coordination.
- Share data, tools, and lessons learned across regions and organisations including platforms such as the UIC.

These tips come from the work of the UIC initiative to future-proof railways against climate extremes RERA (REsilience RAilways).

Find out more here:
https://uic.org/sustainability/article/adapting-to-climate-changes