

Sharm El-Sheikh Adaptation Agenda

TECHNICAL REPORT

2030 Adaptation Outcomes for Resilient Transport Systems

UN Climate Change High-Level Champions publication



Marrakech
Partnership



INVESTING IN RESILIENT TRANSPORT SYSTEMS

Resilient transport systems are key for sustainable and inclusive economic growth

Access to transport underpins the provision of basic services, enabling access to healthcare, education and food markets, and is the cornerstone of supply chains and logistics. Functioning transport systems enable emergency relief to respond quickly and effectively in the face of climate hazards and is critical to recovery efforts.

A resilient transport system is capable of absorbing climate changes and shocks, ensuring the use of transport during and after climate hazards. We define transport systems as transport infrastructure (e.g., roads and railways), vehicles (e.g., bicycles, cars and trains), and underlying planning and management functions.

Transport systems are increasingly exposed to climate hazards

Hazards can damage and temporarily disrupt systems. Climate hazards can shutdown transport systems, for example, where heat waves make public transport unsafe to use or floods make roads impassable. Hazards can also damage infrastructure, for example extreme heat damaging road services or floods washing away bridges. The severity of damage is dependant on the nature of the hazard and vulnerability of the transport system. Road services are at risk of cracking above 32°C resulting in increased maintenance costs, whilst railways track failures can occur above ~40°C increasing the risk of train derailment¹.

	Hazards type	Direct impacts on transport systems and users
Extreme temperatures	 Heatwaves	<ul style="list-style-type: none"> Deterioration of road and rail infrastructure; safety risks for vehicle users with warping and buckling of surfaces and bridge joints
	 Cold Spell	<ul style="list-style-type: none"> Danger to life or health due to exposure to extreme temperatures during transit
Fast-onset	 Flooding	<ul style="list-style-type: none"> Damage to or destruction of exposed infrastructure and rolling stock with increased inaccessibility of roads and railroads and risk of landslides
	 Storms or Cyclone	<ul style="list-style-type: none"> Service interruption due to infrastructure and/or rolling stock being damaged or inaccessible Danger to life or health due to increased likelihood of accidents
Slow-onset	 Rising Sea Level	<ul style="list-style-type: none"> Damage to low-lying coastal road and rail infrastructure, worsening over time

¹ Based on World Meteorological Organization data

Transport modal shifts are changing the vulnerability profile of transport systems globally

Modal shares are shifting towards public transport and active mobility, altering the vulnerability profiles of transport systems. These shifts are driven in part by urbanisation, with urban populations increasingly reliant on public transport and shared mobility rather than vehicle ownership. However, public transport solutions such as metros and underground systems are particularly vulnerable to flooding and heat stress.

We have identified 5 key intervention areas that support access to resilient transport systems

The interventions focus on making resilient transport accessible by scaling infrastructure and affordable solutions and making transport resilient to climate hazards.

	Interventions	Description and resilience impact	Example activity
Making resilient transport accessible to reduce the vulnerability of populations	1 Rail and road infrastructure build-out	Expand rail and road network to improve accessibility while ensuring that new assets are resilient, affordable and minimise emissions	Expand rural road network to connect new villages with an all-weather road, using lower-emission materials
	2 Affordable vehicles and transport solutions	Develop and expand access to affordable, resilient and low-emissions vehicles and transport solutions for emerging markets to lower the vulnerability of users	Financing solutions for purchase of low-carbon vehicles by low-income people; ride-hailing services to expand access to public transport; manufacturing of affordable vehicles with appropriate cooling options
Making transport resilient to minimize hazard impacts on users and local economies	3 Infrastructure hardening	Incorporate climate-resilient design features or components into new or existing assets to reduce vulnerability to climate hazards	Build road drainage systems to avoid road damage from high precipitation; use reflective panels on roads to avoid sun damage
	4 Planning & management tools	Develop tools to optimise the design and management of transport networks to reduce exposure	Smart maintenance software and sensors, smart road network planning
	5 Remote solutions		Remote solutions for learning, working and healthcare; drones to deliver essential relief items post-hazard

There are a number of key opportunities for investors to mobilise action in these areas

Opportunities to unlock investment in the above intervention areas include:

- Early-stage capital in EV two and three-wheelers manufacturing and assembling in areas of low access, including Sub-Saharan Africa and parts of Latin America
- Early-stage capital in ride-hailing and shared mobility apps providing low-cost mobility solutions without increasing vehicle ownership
- Capital to scale local companies providing affordable engineering and construction services to harden transport infrastructure against climate hazards
- Developing public-private partnerships that incorporate blended financing to harden at risk transport infrastructure

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About UN Climate Change High Level Champions

The UN Climate Change High Level Champions engage non-State actors to support governments in delivering the goals of the Paris Agreement. Working with the Marrakech Partnership - a global alliance of more than 320 major initiatives and coalitions - the Champions enhance the ambition of cities, regions, businesses and investors and other non-State actors, to collectively race towards a fair, resilient and zero carbon world.

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