Life-Links for Resilient Supply Chains and Logistics

Framework for collaborative action

Introduction to the Life-Links Framework

Logistics for Europe, 13 November 2025, Brussels

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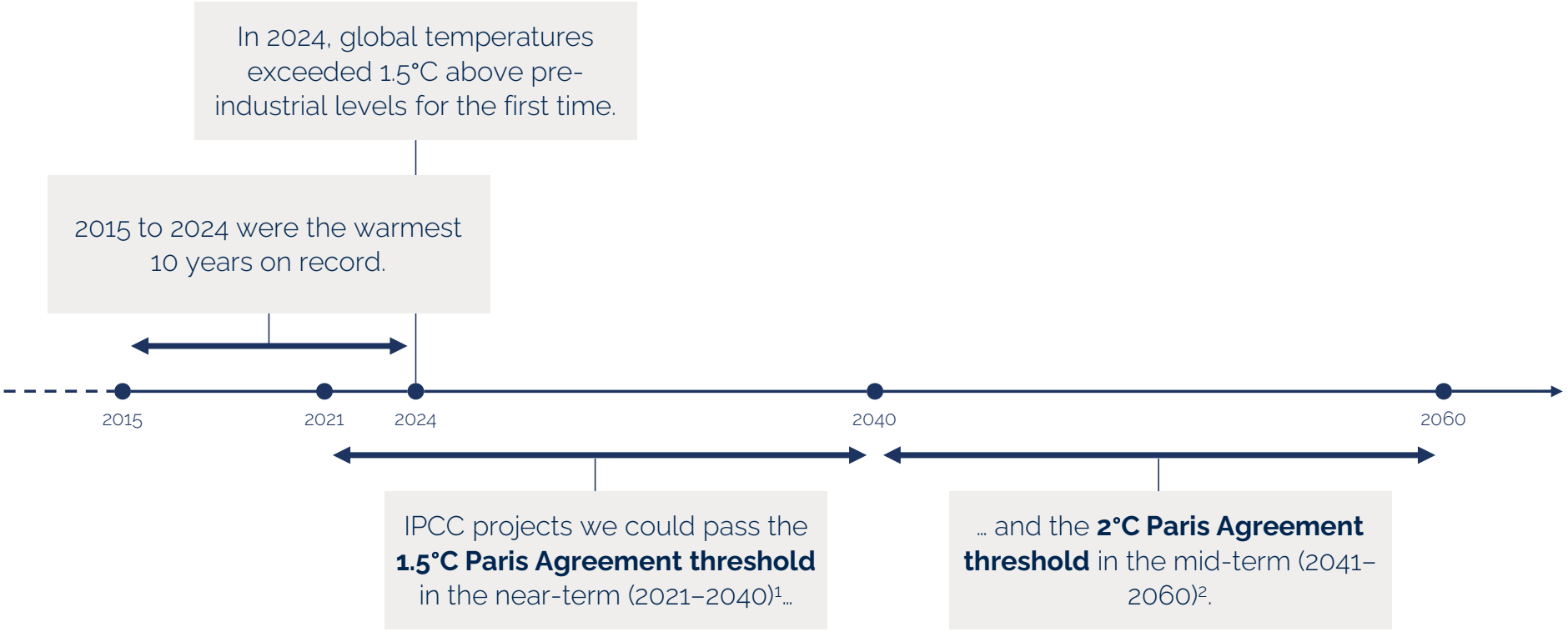
Climate change and logistics

Climate change and logistics

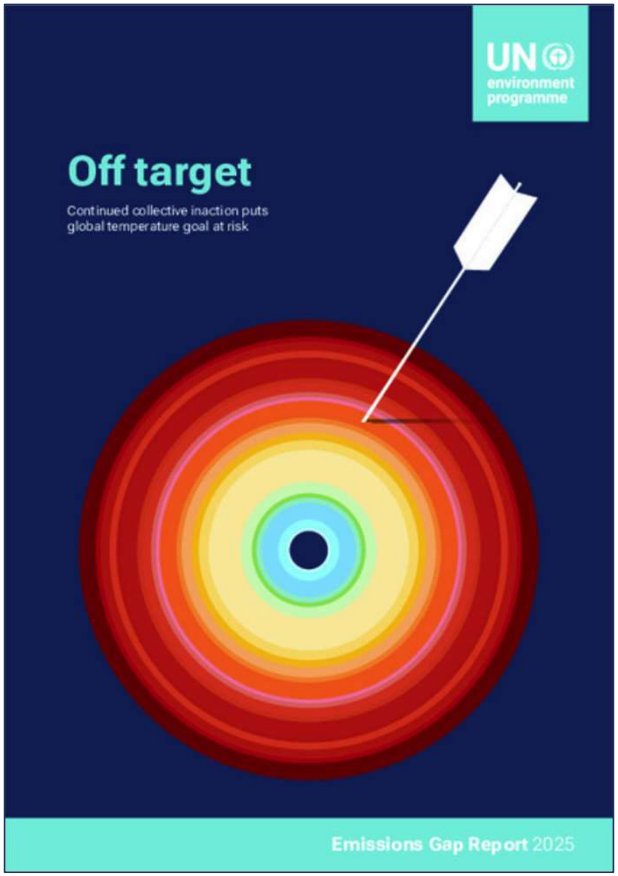
The world could reach 2°C by the 2040's

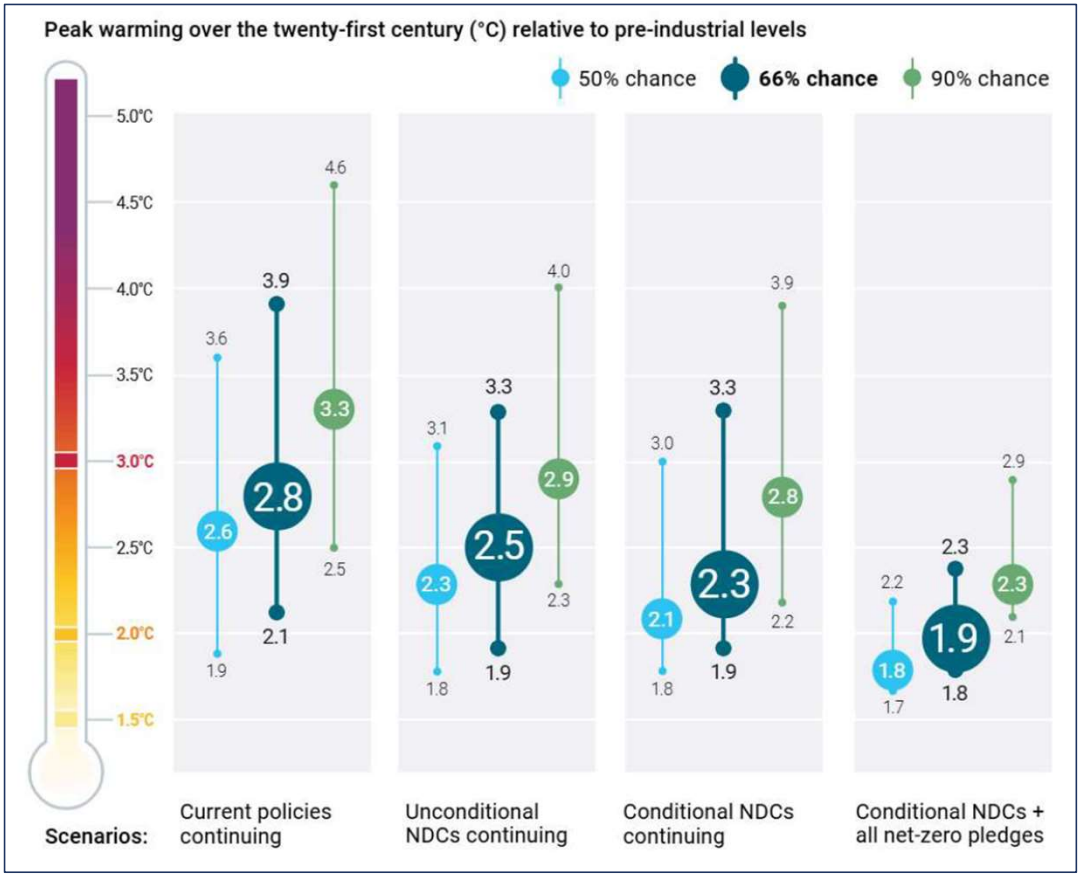


Source: (Copernicus, 2025), (IPCC, 2021)

Climate change and logistics

Climate models show the 1.5°C goal is dead





Published on November 4!

UNEP's *Emissions Gap Report 2025: Off Target* finds that even under the most ambitious GHG scenario, global warming this century is expected to exceed the 1.5°C threshold, reaching 1.9°C.

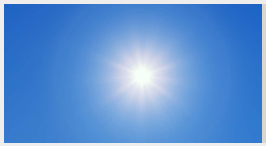
Under current climate policies, temperatures are projected to rise by about 2.8°C.

Source: (UNEP, 2025)

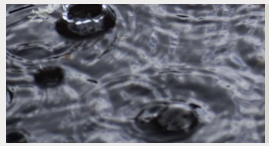
Climate change and logistics

Extreme weather events are increasing in intensity and frequency

Under a 2°C global warming scenario…



Extreme heat events which happened only once every 10 years will likely occur 5.6x more frequently and be 2.6˚C hotter on average.



Extreme precipitation events which happened only once every 10 years will likely occur 1.7x more frequently and be 14% wetter on average.

Drought events which happened only once every 10 years will likely occur 2.4x more frequently and be 0.6 sd* drier on average.

Extreme sea level events that occurred once per century in the recent past are projected to occur at least annually at more than half of all tide gauge locations by 2100.

Source: (IPCC, 2021)

Climate change and logistics

Extreme weather events will be unprecedented also in timing and location

Extreme events will not only be unprecedented in their frequency and intensity, **but also in their timing, location, and the combination of these dimensions**.

Increased intensity

Increased frequency

Different timing

New locations

New combinations (compound)

Source: (IPCC, 2021)

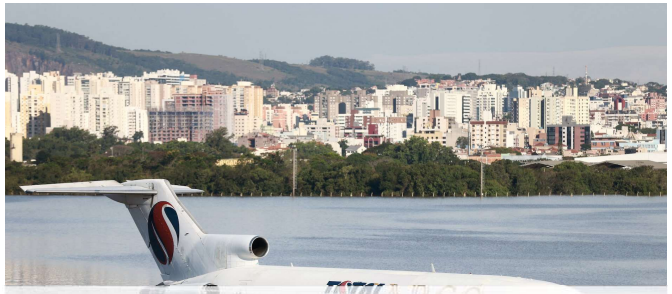
Climate change and logistics

Logistics infrastructure, operations, and workforce are all vulnerable to extreme weather events and climate hazards more generally (1/2)

Damaged road in Germany after flooding in 2021.[1]

Slower trains amidst fear of buckled rails and fires in the UK, 2022.[2]

The Rhine fell to low levels in 2022 causing river-to-rail switch.[3]



Porto Alegre airport in Brazil temporarily closed after flooding in 2024[4].

Durban seaport in South Africa temporarily closed after flooding in 2022.[5]

Collapse of a warehouse after severe storms in the US, 2021.[6]

Source: [1](Schmidt, N., Pleitgen, F., Wojazer, B. and Ravindran, J., 2021); [2](Topham, G., 2022); [3](Latham, K., 2023); [4](Reuters, 2024); [5](Reid, H. and Goodman, D., 2022); [6](Palmer, A., 2021)

Climate change and logistics

Logistics infrastructure, operations, and workforce are all vulnerable to extreme weather events and climate hazards more generally (2/2)

Climate hazards threaten logistics systems across **all transport modes and hubs**, potentially affecting the three main elements of logistics: **infrastructure, operations, and the workforce**.

Transport modes and logistics hubs	Infrastructure vulnerabilities	Operational vulnerabilities	Workforce vulnerabilities
Road	○ Heat warps/asphalt ○ Freeze–thaw damage ○ Erosion, landslides, flooding ○ Coastal flooding/saltwater corrosion	○ Flooded/iced roads impassable ○ Hazardous driving in storms/winds ○ Snow/ice closures	○ Drivers face accident risks in storms/floods/snow ○ Long-haul drivers face heat-stress
Rail	○ Heat deforms tracks (derailment risk) ○ Freeze–thaw weakens embankments ○ Erosion/landslides ○ Bridge scour ○ Coastal flooding undermines railways	○ Flooding disrupts services ○ Trains slowed in heat ○ Snow/ice blocks tracks	○ Frostbite and hypothermia risks for workers de-icing lines or clearing snow
Inland waterway	○ Bridge scour from higher river flows	○ Heavy rain raises levels beyond navigability ○ Drought/low water restricts navigation ○ Reduced snowmelt worsens low-water events	○ Fast currents and high water levels increase risk of collision or grounding
Sea	○ Melting sea ice alters routes, increases risk	○ Severe storms/winds disrupt shipping ○ Snow/ice decline lengthens Arctic seasons but can still block routes	○ Seafarers exposed to storms, ship motion, and sea spray
Warehouse / Packhouse / Distribution center	○ High winds tear off roofs/destabilize structures ○ Heavy snow overloads roofs	○ Flooding inundates warehouses/terminals, damaging goods and halting operations	○ Heat stress in non-cooled spaces ○ Injuries if structures fail
Rail terminal	○ Flooding and freeze–thaw damage	○ Disruptions if tracks/handling areas are flooded or snow-covered	○ Wildfire smoke exposure for platform staff and yard workers
Marine port / terminal	○ Sea level rise/storm surges damage ports ○ Saltwater accelerates corrosion	○ High winds halt crane operations ○ Flooding/storm surge disrupts access	○ Dock workers face heat illness ○ Exposure to storms/high winds/sea conditions

Source: (Life-Links, 2025)

Life-Links framework

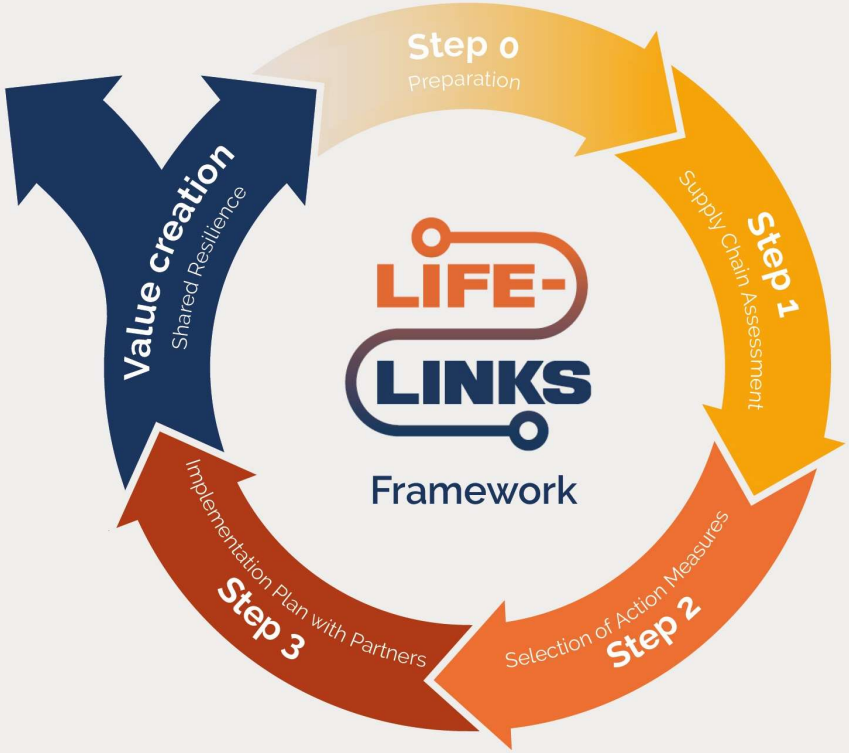
Life-Links framework

The Life-Links framework guides supply chain actors to co-develop and co-invest in solutions that enhance the resilience of critical transport links.

What it is and what it aims for

- A **practical and collaborative** approach to strengthen the **critical transport/ logistics links** that keep supply chains moving.
- Diverse actors affected by supply chain disruptions co-develop and co-invest in solutions that **build shared resilience** while reducing emissions and promoting sustainable development.
- Structured in **three logical steps**: assessment, selection of measures, and implementation.
- Supports the Paris Agreement (mitigation, adaptation, and finance), and contributes to the Sustainable Development Goals (SDGs).

The Life-Links framework was developed by Sophie Punte, with inputs from the Life-Links Council and the Kuehne Climate Center who's currently driving two applications. It was launched in October 2025.



Source: (Life-Links, 2025)

Life-Links framework

The Life-Links framework prioritizes strengthening measures, focusing on enhancing long-term, structural resilience

Life-Links prioritizes measures within the **strengthening** strategy, focusing on enhancing **long-term, structural resilience** by addressing the root causes of disruptions in logistics systems rather than relying on avoidance strategies.

Logistics system	Resilience strategy		
	Avoid (reduce exposure)	Manage (prepare, respond, recover)	Strengthen (long-term structural resilience)
Infrastructure	○ Repositioning of nodes and assets from high-risk locations ○ Reducing dependence on more risk-prone modes ○ Additional logistics hubs ○ Increase storage capacity for additional inventory ○ Diversion of flows from high risk routes	○ Regular inspection and maintenance ○ Predictive maintenance ○ Strengthen assets against risk factors ○ Duplicate / spare critical equipment ○ Install back-up power supply and IT support ○ Real-time monitoring and early warning systems	○ Multimodal resilience within existing corridors ○ Retrofitting & upgrading existing infrastructure ○ Protective systems and barriers ○ Enhanced drainage systems ○ Nature-based & hybrid solutions ○ Smart monitoring & predictive maintenance ○ Energy & utility resilience
Operations	○ Near-sourcing ○ Reduce dependence on risk-prone suppliers and carriers ○ Supplier diversification / multiple source critical suppliers ○ Expanding client base	○ Raise inventory levels ○ Business continuity plans ○ Dynamic routing and emergency scheduling ○ Rapid response during disruptions ○ Relax delivery schedules ○ Increase flexibility to switch machines, processes	○ Advanced planning & coordination ○ Process hardening & flexibility ○ Enhanced inventory, storage & packaging ○ Transport & logistics optimization ○ Cyber & digital resilience
Workforce & stakeholders	○ Reduce deployment in hazard zones ○ Remote operations / automation to limit workforce exposure	○ Emergency/safety protocols ○ Contingency plans for staff ○ Workforce capacity and rapid mobilization ○ Early warning systems for workers and stakeholders ○ Staff awareness program of risk factors and impacts ○ Communication network	○ Stakeholder engagement & collaboration ○ Capacity building & specialized training ○ Institutionalizing resilience roles & functions ○ Wellbeing & workforce support ○ Knowledge & continuous improvement ○ Parametric insurance schemes for drivers, suppliers, and logistics SMEs

Source: (Life-Links, 2025)

Life-Links framework

The Life-Links framework defines three levels of collaboration, ranging from isolated action to collective investment

- **Collaboration** as defined in Life-Links spans **three levels**: isolated action by individual actors, coordinated action through aligned efforts, and collective investment where partners pool resources and share risks to fund joint measures.
- All are valid, of course; the choice depends on the scope of work and context, with collective investment typically enabling larger, more transformative projects

Isolated action	Coordinated action	Collective investment
		
Individual actors take action measures alone	Partners coordinate around one or across multiple action measures, without financial transfers	Partners pool or unlock finance for action measures through co-funding, guarantees, or risk-sharing, including through PPPs
Example: a warehouse installs flood barriers without coordination with transport operators	Example: a regional trade corridor platform invites private firms to time their logistics upgrades with donor-supported infrastructure works	Example: a retailer provides a product offtake guarantee, enabling a producers' cooperative to secure a bank loan for a new packhouse

Source: (Life-Links, 2025)

Life-Links framework

The Life-Links framework is available on the Life-Links website.

Thank you!