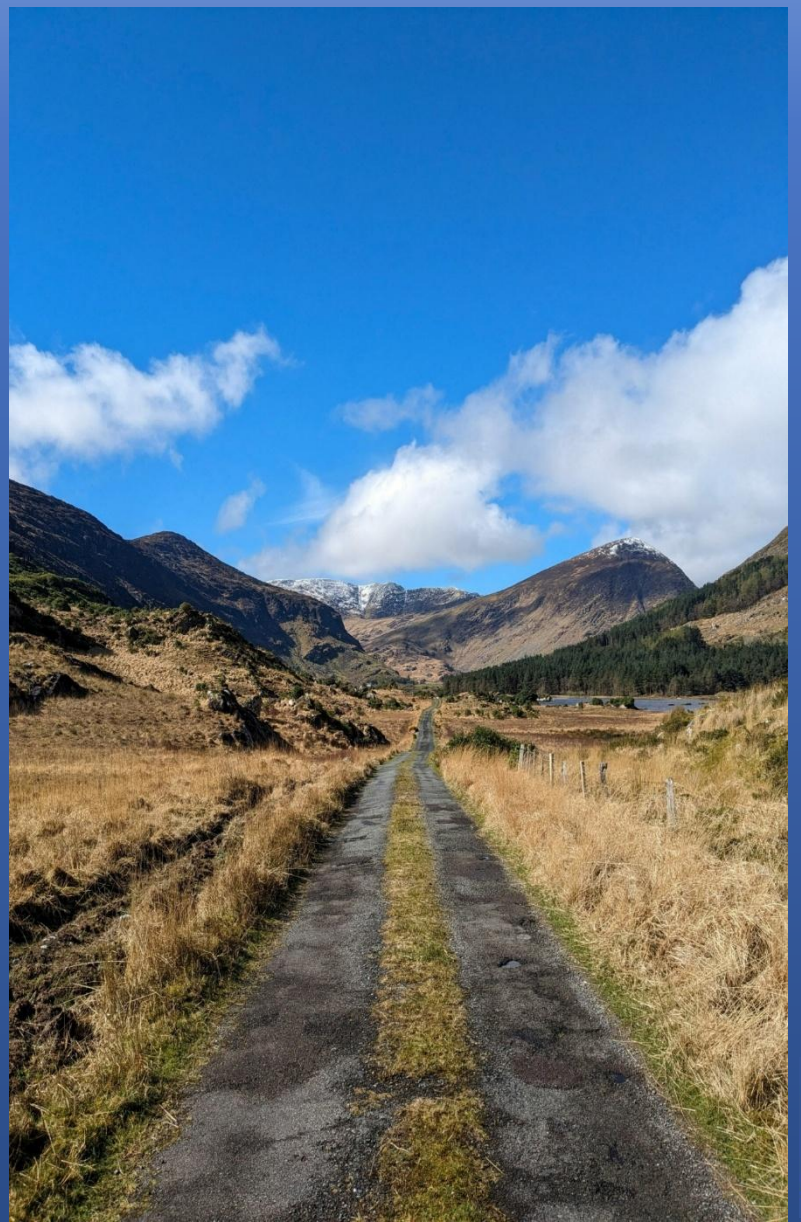
Andrea Lennon
Climate Adaptation
Department of Transport

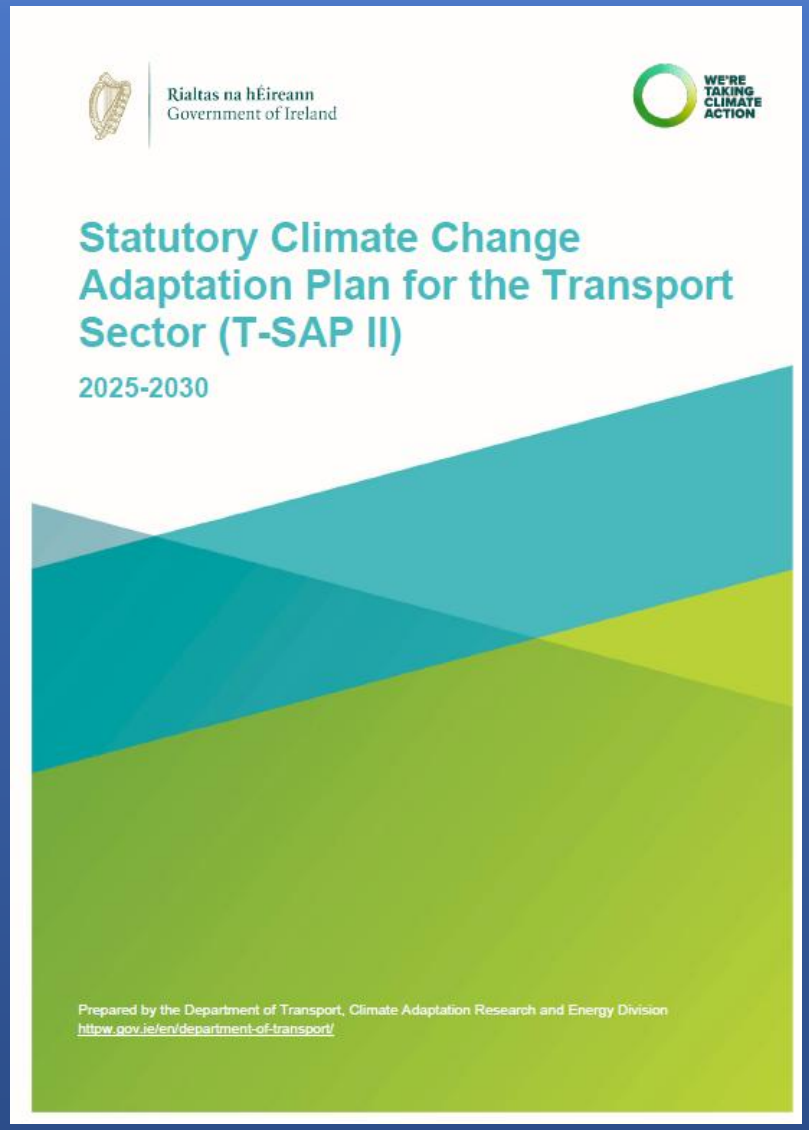
Transport Sectoral Adaptation Plan T-SAP II & Implications for Regional Local Roads

Contents

- T-SAP II Overview & Context
- Process & Methodology
- Priority Risk & Impact
- Action Co-Development
- Governance & Monitoring



1. T-SAP II Overview & Context



The Draft Plan – At a Glance

- **Revised adaptation objectives** that align to the NAF vision, guiding principles and themes.
- **Assessment of extreme weather impacts** 'likely' 4.5RCP and 'worst-case' 8.5RCP IPCCC scenarios projected over 2030, 2050 and 2100 timeframes
- **49 priority risks** identified across all transport modes and climate hazards, from a long list of 114.
- **40 'smart' actions** co-developed with transport stakeholders.
- **Including 14 cross-cutting actions** including, capacity building, financing, NbS, and just resilience.
- Implementation supported by **13 high-level KPIs**, and proposed **adaptation champions** within each transport sub-sector.
- **Incorporates feedback** from the CCAC, EPA on environmental requirements, and the public.

Adaptation Planning Context - What's New?

More Severe Climate Impacts:

- ❑ **National Framework for Climate Services**
- ❑ Met Eireann – **TRANSLATE**
- ❑ **National Climate Change Risk Assessment**
- ❑ **Risk Assessment and Action Co-Development across 7 transport sub-sectors**~ Road, Bus, Active Travel, Heavy Rail, Light Rail, Aviation, Maritime.
- ❑ **Case Studies** of recent extreme weather events impacting transport

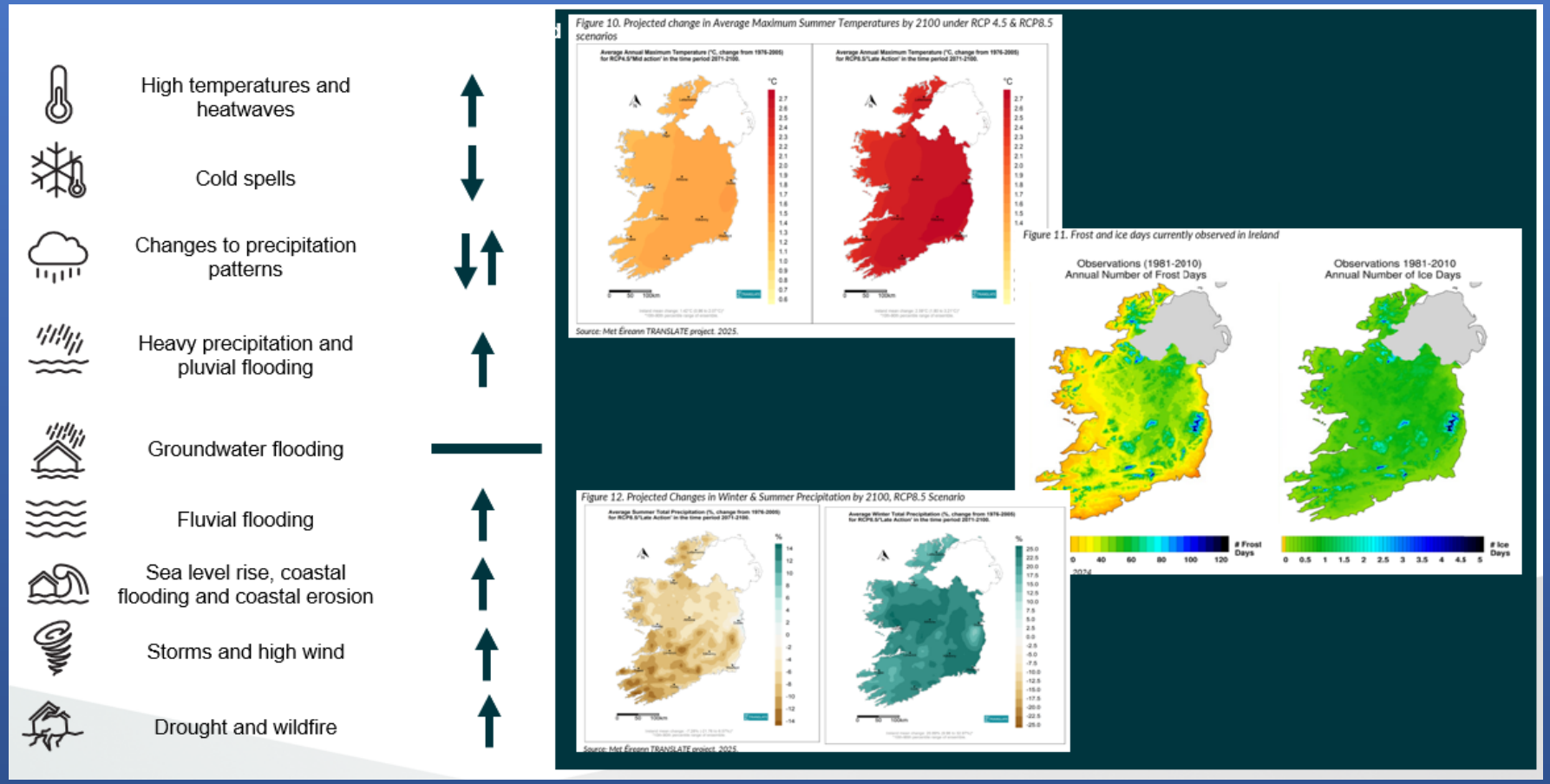
Evolving Policy and Legislation:

- ❑ **National Adaptation Framework** (2024)
- ❑ **Sectoral Planning Guidance** – Approach and Methodology
- ❑ **EU Adaptation Strategy, EUCRA**, and **EU CER Directive**
- ❑ **EU Strategic Environmental Assessment & EU Habitats Directives**

Growing need for transport infrastructure and services:

- ❑ **Transport demand growth**, macro-economic trends and population growth
- ❑ **Expansion** of public transport, active travel and electrification
- ❑ State of climate change adaptation readiness **Pilot Monitoring Reporting Evaluation and Learning Framework** (2023-25)

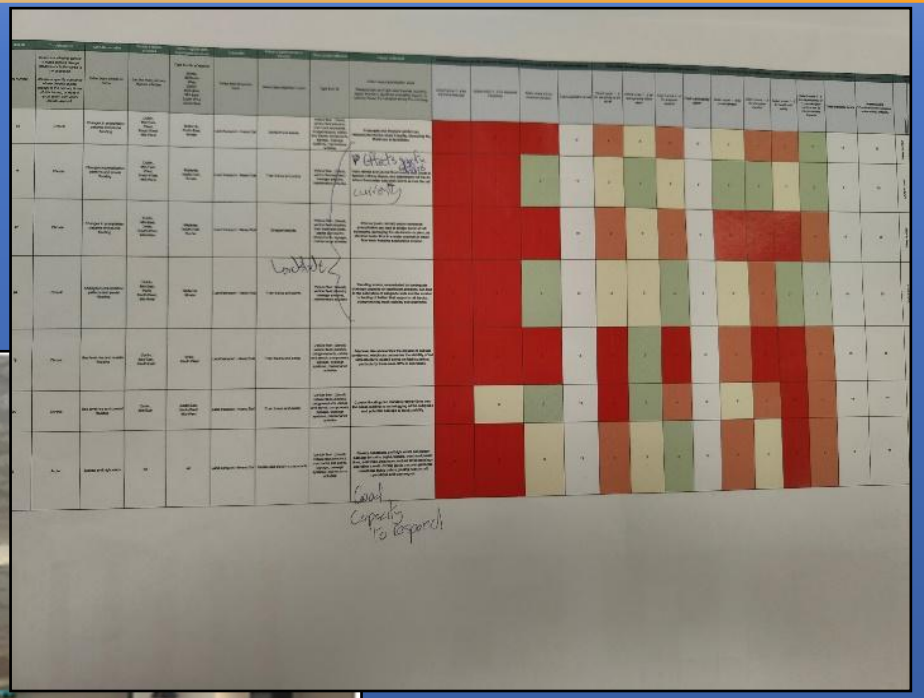
Climate trends in Ireland under different scenarios



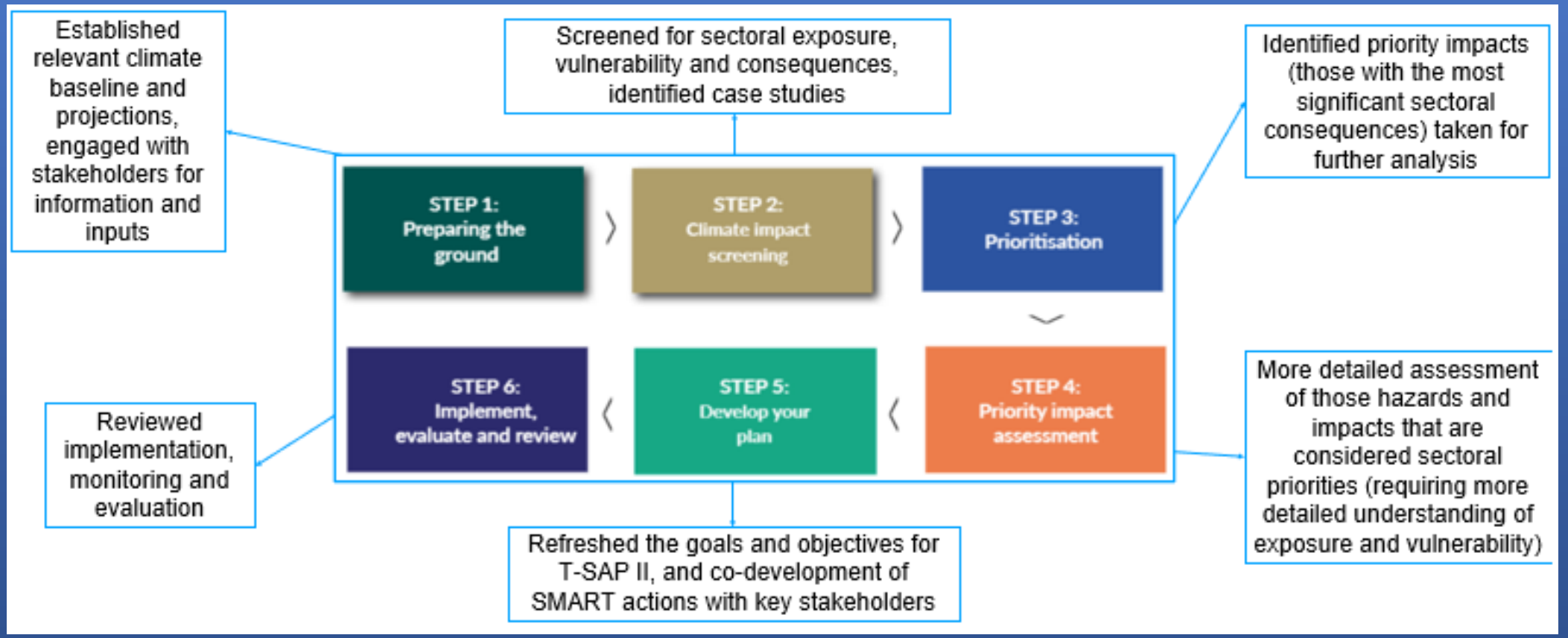
A Transport Network Perspective

Roads	Active Travel	Buses	Heavy rail	Light rail	Aviation	Maritime
						
High-level summary: Current state of the network						
• National primary roads are **generally well-maintained** • Regional and local roads **vary** in condition geographically, **generally poor**	• **Expanding** network primarily in **urban and suburban** areas • **Limited** facilities in **rural** regions • Condition varies **significantly** between counties	• Offers **extensive coverage** serving both urban and rural areas • Common operational challenges include **traffic congestion, capacity constraints and service performance**	• Mostly **single-track** limiting **service frequency** and creates **coverage gaps** • Parts of the network are **highly vulnerable** to extreme weather events • The **lack of redundancy** results in high dependency on **bus** replacements	• **Fully electrified** and relatively **new** network • Most assets in generally **good condition**	• **Extensive network** to the rest of the world • Well developed and maintained but the **condition of assets varies** between State and Reginal airports • **Lack of rail connectivity**	• **Critical** - 90% of Ireland's traded good transported through port network • Encounter **location-specific challenges** i.e. accessibility, environmental constraints • **Dredging** is a common challenge

2. Process & Methodology



Sectoral Planning Guidelines



Risk Assessment to Action Development

Workshop #1 – Validation of Impact prioritisation

Outputs:
- Identified key risks to prioritise in the risk assessment for each transport subsector
- Provided insights for the risk assessment ratings

Sources:
- Transport sub-sector maps
- Climate maps based on Met Éireann climate data

RISK IDENTIFICATION								
Risk ID	Chronic/Acute	Climate variable	Primary region affected	Other regions with significant exposure	Subsector	Primary asset category affected	Other assets affected	Impact statement
Add number	*Determine whether chronic or acute climate change impacts—or both—need to be assessed.* *Are there specific scenarios where chronic climate change is the primary driver of this impact, or does it result solely from acute climate events?*	*Select from dropdown menu*	*List the main primary regions affected*	*Type the list of regions* *Border* *Midlands* *West* *Dublin* *Mid-West* *Mid-East* *South-West* *South-East*	*Select from dropdown menu*	*Select from dropdown menu*	*Type from list*	*Select impact prioritisation sheet* *"Medium(high) and High rated impacts, including impact that have significant cascading impacts, or selected based the validation during the workshop*

Priority impact assessment

A score from 1 to 5 has been allocated in accordance with various criteria for exposure, vulnerability and criticality. Workshop discussions and evidence from past events informed these scores.

Exposure
- ❑ Intensity
- ❑ Frequency
- ❑ Duration

Vulnerability
- ❑ Sensitivity
- ❑ Asset management
- ❑ Adaptive capacity

Criticality
- ❑ Asset damage
- ❑ Disruption duration
- ❑ Health and safety

Risk ratings assigned based on likelihood and consequence set out in risk matrix.

Initial risk ratings
- ❑ RCP 4.5 & RCP 8.5 for 2030, 2050 & 2100

Confirm priority climate impacts

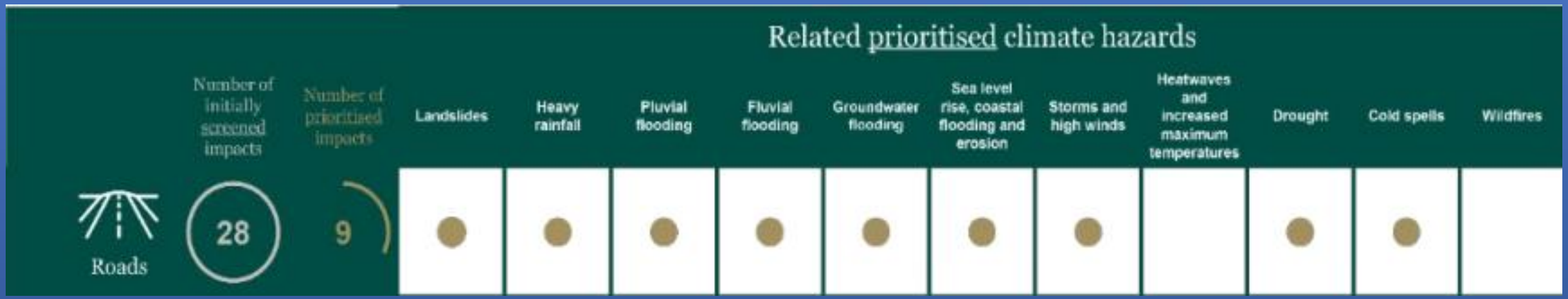
Undertake more detailed climate risk assessment

Confirm risk assessment findings in second workshop

Action co-development with stakeholders x 4 workshops

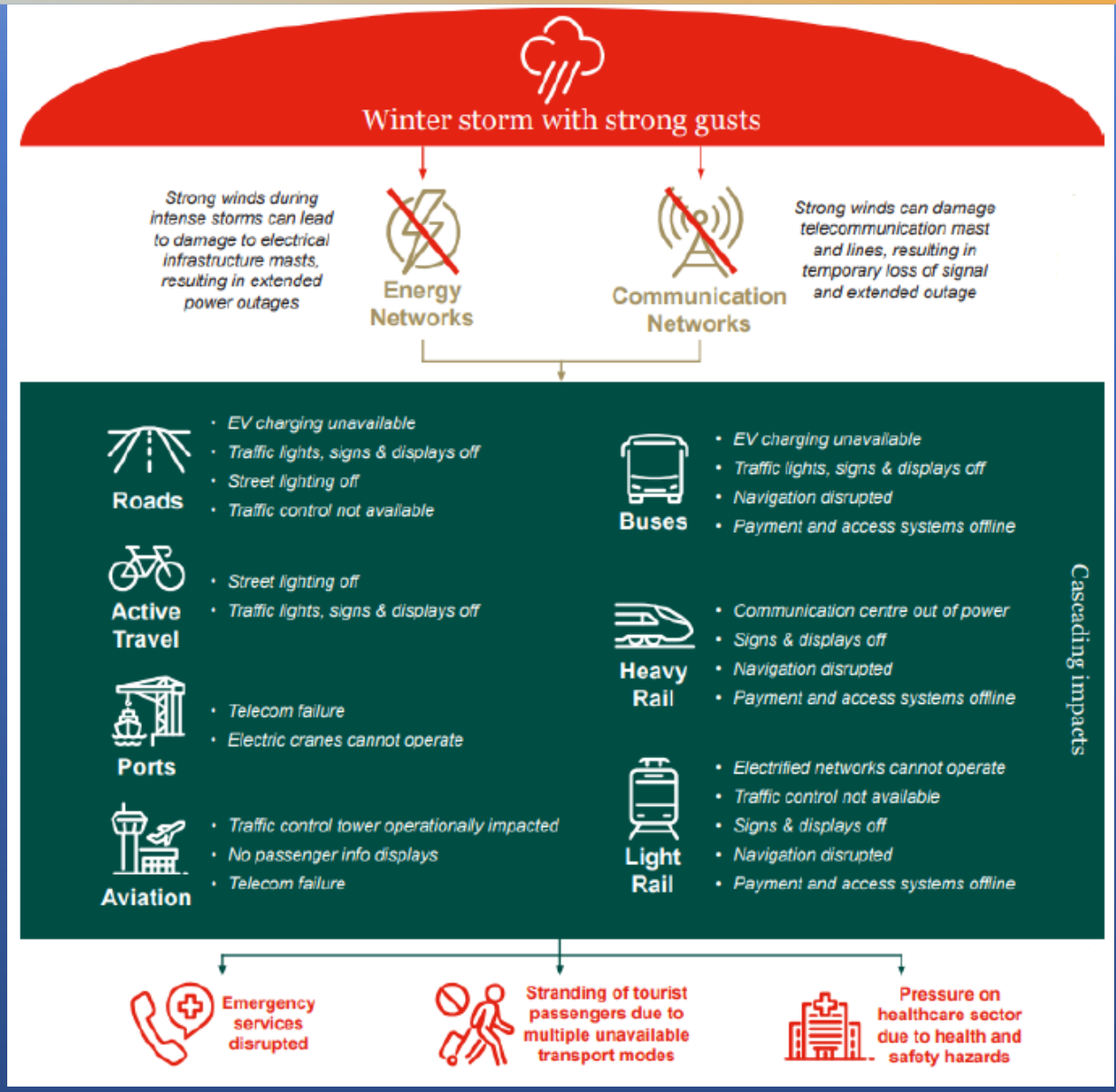
3. Priority Risk & Impact

Session : 3 Transport Sectoral Adaptation Plan T-SAP II & Implications for Regional Local Roads



Climate hazard	Prioritised impact on roads	Risk Ratings					
		Short Term (Year 2030)		Mid-Term (Year 2050)		Long Term (Year 2100)	
		RCP4.5	RCP8.5	RCP4.5	RCP8.5	RCP4.5	RCP8.5
Changes in precipitation patterns and pluvial flooding	Prolonged and frequent rainfall events can saturate the soil, reducing its shear strength and cohesion. This increased water content weakens slope stability, elevating the risk of landslides, particularly in areas with steep gradients or loose, unconsolidated materials.	Medium	Medium	Medium	High	High	High
	Prolonged and frequent rainfall events can overwhelm drainage systems and lead to flooding of surface water and standing water.	High	High	High	High	Very high	Very high
	Changing precipitation where it decreases in summer and increases in winter could lead to greater seasonal variability in groundwater levels. Where there is sustained rainfall over a prolonged period, this can result in groundwater flooding with waterlogging on the road.	High	High	High	High	High	High
Fluvial flooding	Fluvial flooding can cause the inundation of roads and underpasses, leading to submersion and washouts that render them impassable.	High	High	High	Very high	Very high	Very high
	During heavy or prolonged rainfall events, rivers can experience increased flows, which could lead to fluvial flooding. The fast-flowing water can erode sediment around the piers and abutments of bridges, making them unstable.	Very high	Very high	Very high	Very high	Very high	Very high
Storms and high winds	Strong winds and stormy conditions can result in roadside trees/vegetation falling over and in debris blocking roads.	High	High	High	High	High	High
Cold spells	Cold spells can cause freeze-thaw action on roads which will result in damage to the road subgrade and subbase. This can then make roads hazardous to road users.	High	High	High	High	Medium	Medium
Drought	dry spells and drought can result in settlement damage to roads through peatland areas. This can result in necessary maintenance and repair activities, which may cause disruption and delays to road users.	Medium	Medium	Medium	High	High	High
Coastal flooding and coastal erosion	Sea level rise can accelerate the rate of coastal erosion, which can result in roads collapsing or being washed away.	Very high	Very high	Very high	Very high	Very high	Very high

Cascading Risks & Impacts



4. Action Co-Development

T-SAP II Goals and Objectives

Adaptation Goal:

"The overarching goal of T-SAP II is building long-term resilience across all transport modes in Ireland by adapting to current and future climate conditions to minimise negative impacts on transport services and infrastructure and reduce their consequences. This will enable the transport sector to continue fulfilling its economic, social and environmental objectives."

Objectives:

1. Support capacity building across all transport modes to develop resilience to potential climate impacts on transport infrastructure and close outstanding knowledge gaps;

2. Enable transport stakeholders to act upon their organisational adaptation priorities and embed climate resilience into their asset management processes;

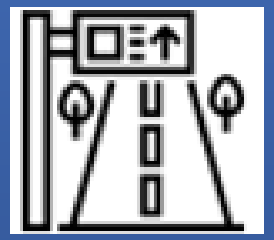
3. Ensure that resilience to weather extremes and longer-term adaptation needs are taken into account in investment programmes for asset management of existing, as well as planned future transport infrastructure.

An Roinn Iompair | Department of Transport

T-SAP II Actions

- **Aligned to the Plan objectives** and developed across **5 themes**
  - Legislative, Regulatory or Policy Change
  - Nature-Based Solutions
  - Behaviour/Organisational Change
  - Technical Solutions
  - Adaptation Financing
- All Actions screened against relevance for **just resilience, nature-based solutions, and maladaptation; Mitigation Co-Benefits** were also considered
- **40 Actions** across transport sub-sectors including **14 cross-cutting actions, including:**
  - Undertake additional research on future projections for key climate hazards
  - Undertake a climate adaptation skills gap analysis and deliver training
  - Map interdependencies between transport modes as they relate to climate resilience
  - Develop an efficient planning route for critical transport infrastructure projects
- **Lead and supporting roles** assigned, **resources** needed, and **timelines** and **milestones** identified

T-SAP II Road Actions



ID	Action	Key objective supported	Theme	Additional resources needed	Responsible entity	Supporting stakeholders	Timeline for completion	JR	NbS	MD
R1	Propose new funding schemes for climate-proofing roads in Ireland	Objective 3	Adaptation financing	Required	Department of Transport (RLRD, NRGAT)	CAROs, TII, LAs, NTA	Q4 2027	✓		
R2	Improve data collection and sharing on road infrastructure and climate hazards	Objective 2	Technical solutions	Required	Department of Transport (RLRD, NRGAT)	CAROs, TII, LAs	Q4 2027	✓		
R3	Continue to implement the existing climate adaptation strategy for roads	Objective 2	Behaviour / organisational change	Required	Department of Transport (RLRD), Transport Infrastructure Ireland	CAROs, LAs	Continuous - based on 5-year cycle – Q4 2030		✓	✓
R4	Streamline the request for financial resources to TII and Local Authorities in the aftermath of extreme weather events	Objective 3	Behaviour / organisational change	Not required	Department of Transport (RLRD)	LAs, RMO, TII	Q1 2028	✓		
R5	In addition to existing coordination, develop sectoral response guidelines to coordinate during extreme weather events	Objective 1	Behaviour / organisational change	Not required	Department of Transport (CARE)	TII, DoT (EPD), LAs, CCMA, LGMA	Q2 2028	✓		
R6	Enhance collaboration between the National Transport Authority, local authorities, bus operators and Transport Infrastructure Ireland on climate-proofing urban roads	Objective 2	Technical solution	Not required	National Transport Authority	DoT, LAs, TII, Bus operators, DHLGH	Q1 2027	✓	✓	✓

Action Implementation – Next Steps

- 40 Actions under TSAP II across 7 Modes and 'Cross Sectoral'
- Establish a Baseline Reporting Framework:

  Step 1 - Confirm milestones and breakdown to tasks level and key deliverables
  Step 2 - Assign task owners, estimated start-finish times and dependencies

- **Kick-off meetings held with all Sectoral Action Holders** - 'Action Breakdown' for all 'Sectoral' Actions
- Quarterly meetings with Champions – Action Breakdowns as Framework
- T-SAP II Action Log and Dashboard for internal reporting, aligning with CAP reporting framework

5. Governance & Monitoring

Governance

- LACAPs - independently elected local government – annual report
- SAPs are implemented & reported on to Sectoral Ministers
- National Adaptation Steering Committee (meets quarterly)
- Task Force on Adaptation - barriers & crosscutting issues
- Climate Change Advisory Council – Annual Report & Scorecard

Figure 21. T-SAP II Governance Structure

Monitoring Reporting Evaluation & Learning

Core Resilience Indicators

Objective 1: Support capacity building across all transport modes to develop resilience to potential climate impacts on transport infrastructure and close outstanding knowledge gaps

Indicator	Description	Related actions
1. **A) Number of trainings / awareness raising programmes related to climate risk and resilience per transport entity delivered, per year** **B) Total number of staff attending training / awareness raising programmes, per year**	This indicator shows progress on climate-related capacity-building within different transport stakeholder organisations. DoT could consider target setting (e.g. minimum of 20 people per organisation reached in 2026).	CS1, CS3, B1, HR3, P2

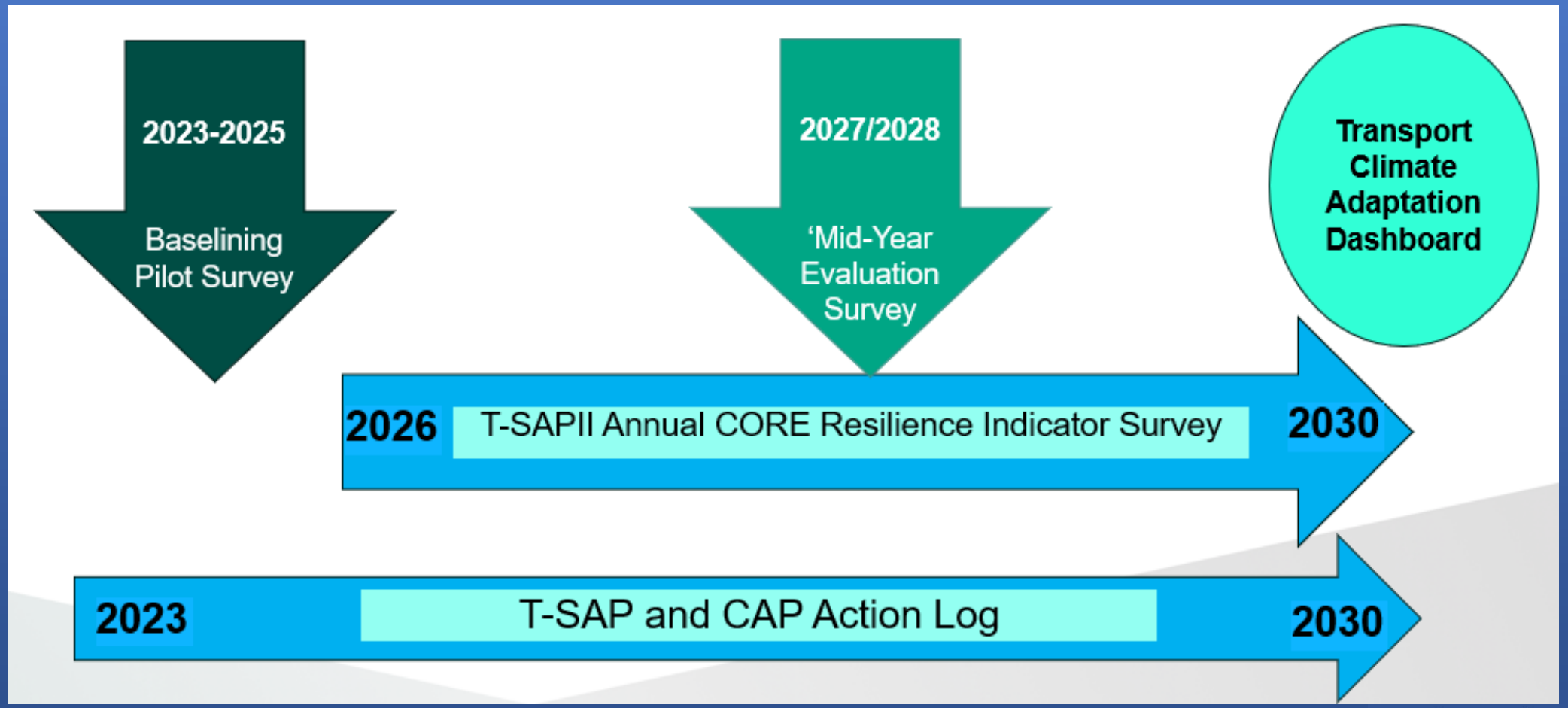
Objective 2: Enable transport stakeholders to act upon their organisational adaptation priorities and embed climate resilience into their asset management processes

Indicator	Description	Related actions
6. **Average service recovery time for critical routes or nationally important infrastructure during extreme weather events (in hours)**	This indicator aims to provide an insight into how long it takes, on average, for a critical route to become operational after a flood, or storm, or another extreme weather event. The indicator is not intended to be used for comparative purposes, but to set a baseline.	Multiple actions (indirectly)

Objective 3: Ensure that resilience to weather extremes and longer-term adaptation needs are taken into account in investment programmes for asset management of existing, as well as planned future transport infrastructure.

Indicator	Description	Related actions
11. **A) Estimate of damage to transport infrastructure per event, per transport mode, per year (in EUR)** **B) Estimate of economic losses due to journey cancellations and delays, per event, per transport mode, per year (in EUR)**	This indicator aims to quantify damage to infrastructure and economic losses caused by different climate hazards and how this figure has changed over years.	CS6
12. **Percentage of overall organisational investment plan dedicated to climate adaptation and resilience, per organisation**	The indicator provides an insight into how much of organisational investment plans consider climate adaptation, and how this figure is changing over investment cycles.	Multiple actions (indirectly)

MREL 2026-2030



Andrea Lennon, Climate Adaptation, Department of Transport

THANK YOU

For more information see the gov.ie Transport Adaptation webpage

Join the Q&A session at **Slido.com** and enter 2063208 or via the **QR Code.**

Questions must include name and associated Local Authority to be considered by the panel.

LASNTG Local Authority Services National Training Group

An Roinn Iompair
Department of Transport

CCMA
Cumann Lucht Bainistiochta Contae agus Cathrach
County and City Management Association

RSTG Annual Conference 2026
14TH - 15TH MAY | WHITE'S HOTEL, CO. WEXFORD