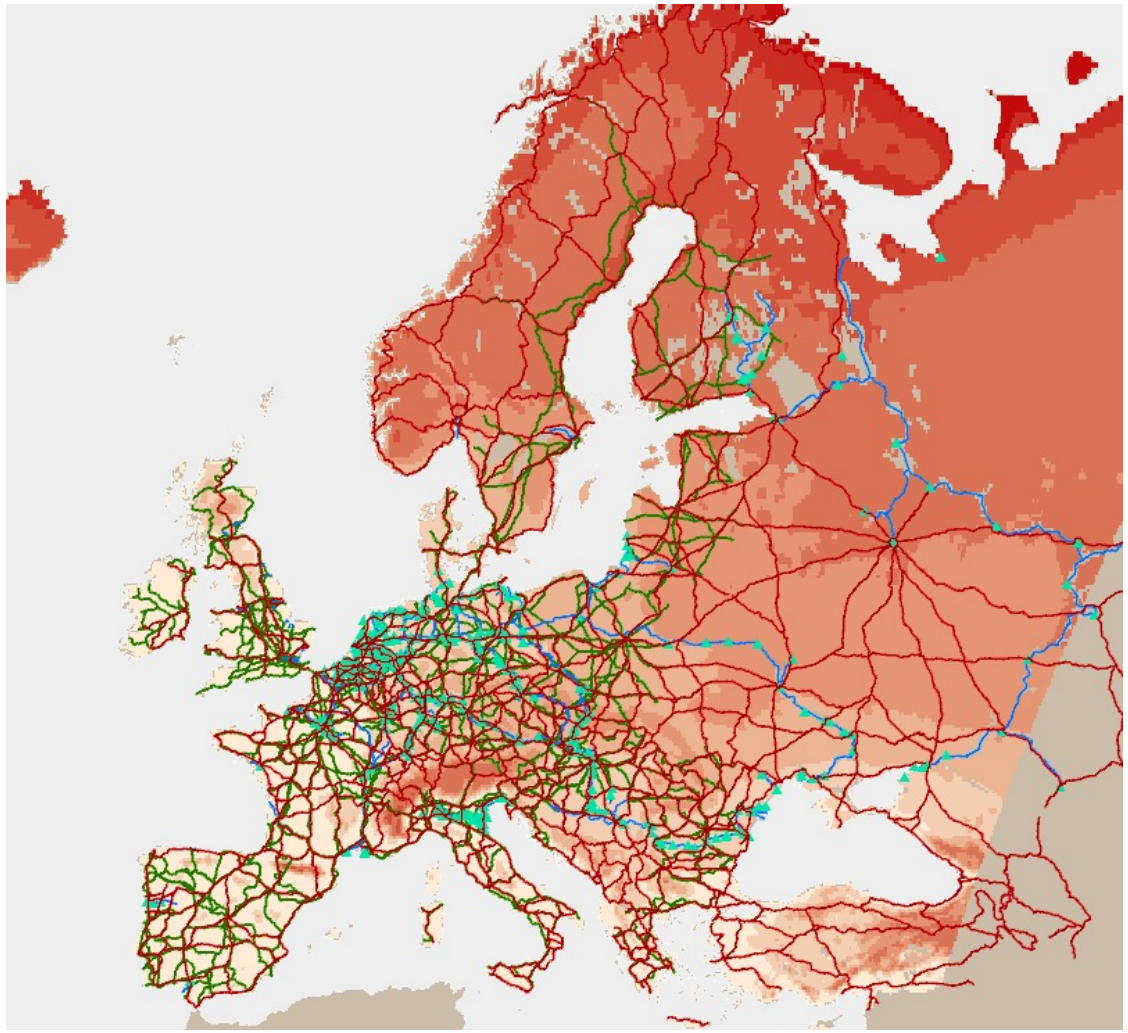


What UNECE and countries are doing to make the transport infrastructure resilient

Session 2: Resilient Transport Infrastructure

Lukasz Wyrowski

Training-workshop for policy-makers from Landlocked Developing Countries and Transit Countries online, 27-28 September 2021

TRANSPORT

Focus

Activities of the UNECE Group of Experts on Assessment of Climate Change Impacts and Adaptation for Inland Transport (2020-2025) and its preceding groups

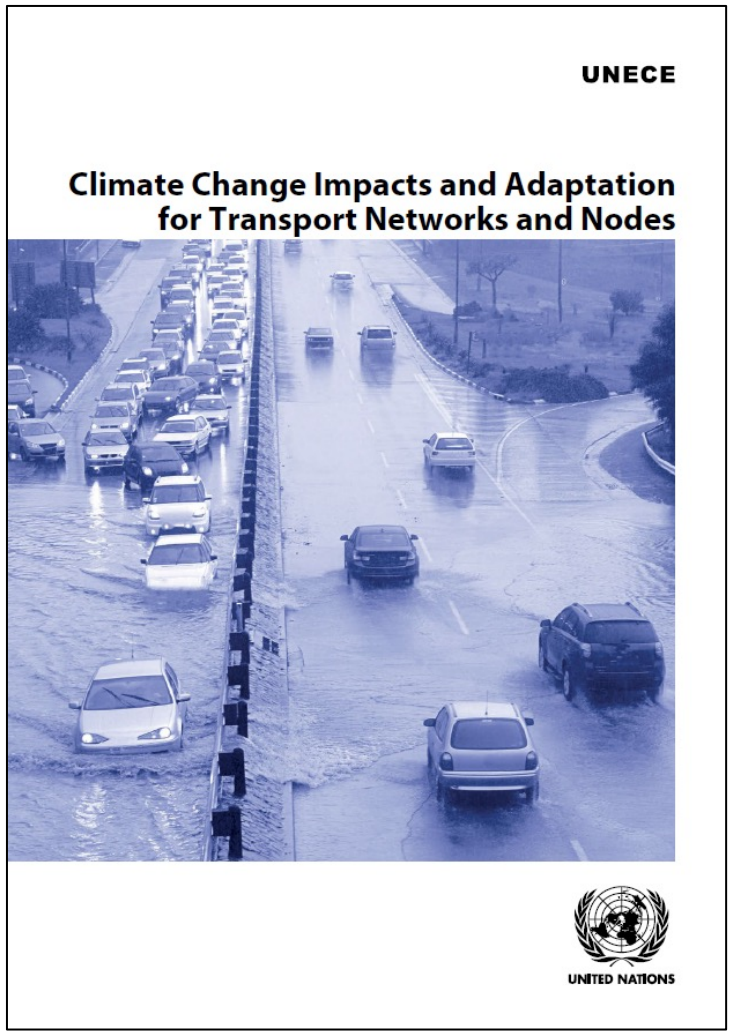
Climate resilient transport infrastructure/system

13.1 Strengthen **resilience and adaptive capacity to climate-related hazards and natural disasters** in all countries

13.2 Integrate climate change measures into national policies, strategies and planning

13.3 Improve education, awareness-raising and human and institutional capacity on climate change mitigation, **adaptation, impact reduction** and early warning

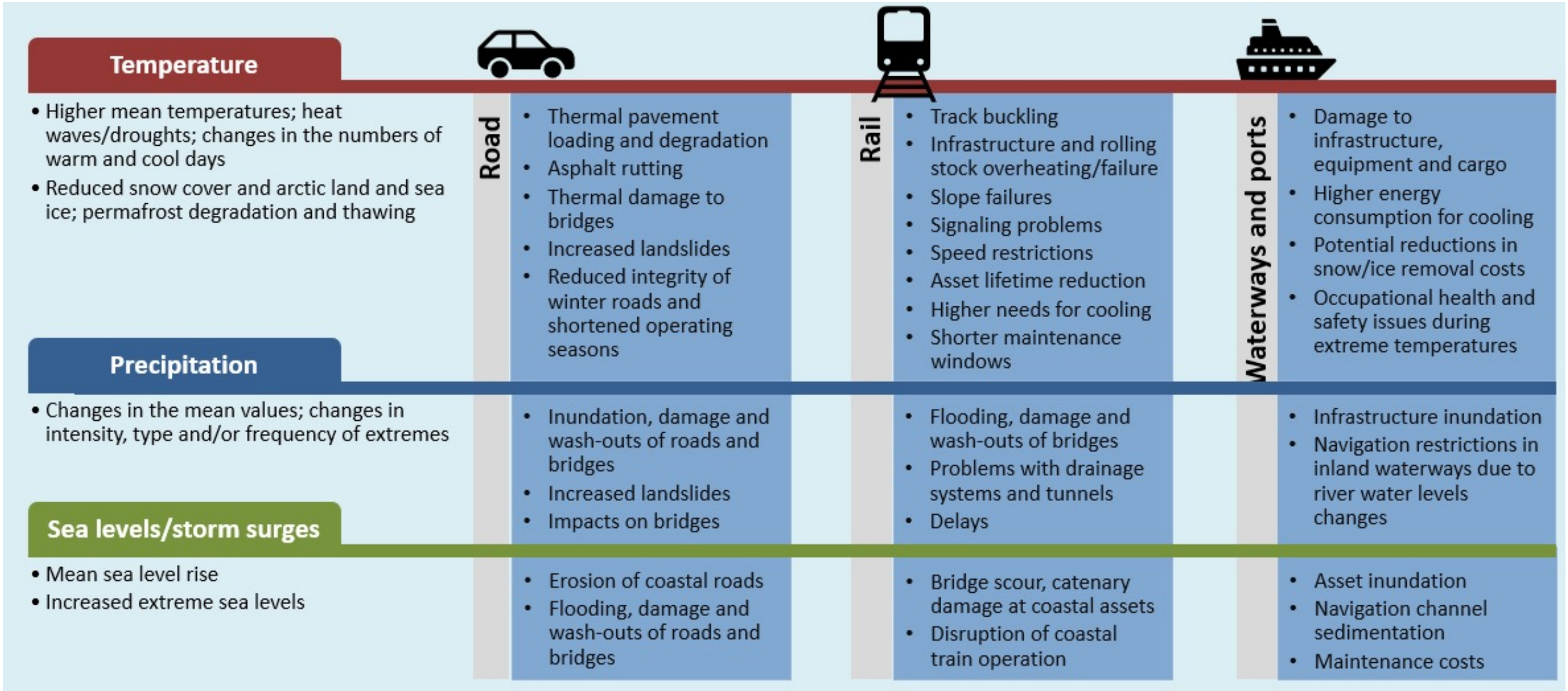
Focus



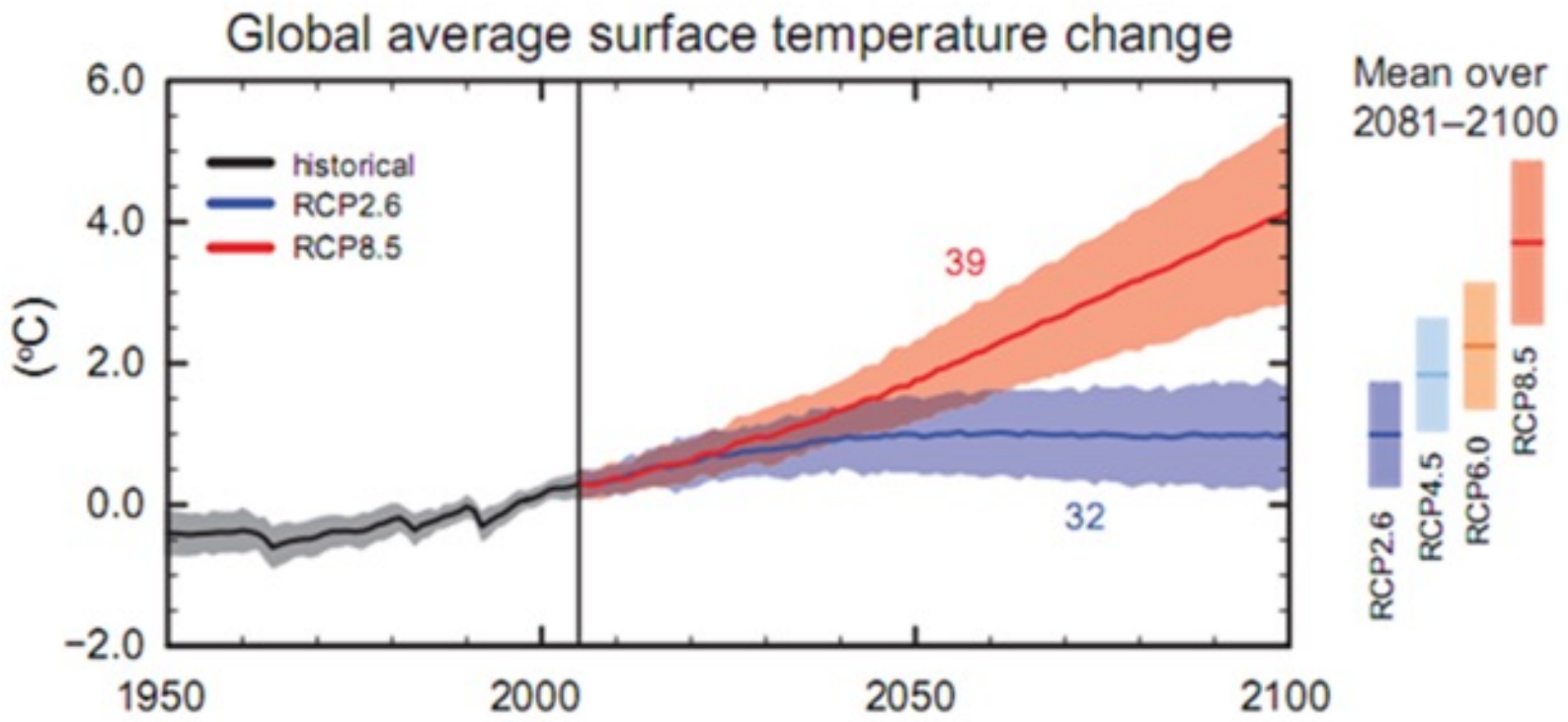
Outcomes of the work of the Group of Experts on Climate Change Impacts and Adaptation for Transport Networks and Nodes

https://unece.org/transport/publications/climate-change-impacts-and-adaptation-international-transport-networks-0

Some examples of climate change impacts on transport infrastructure and operations

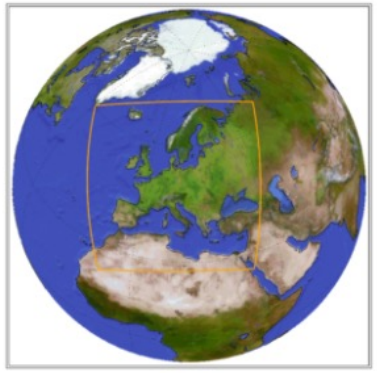


Current impacts vs future potential impact

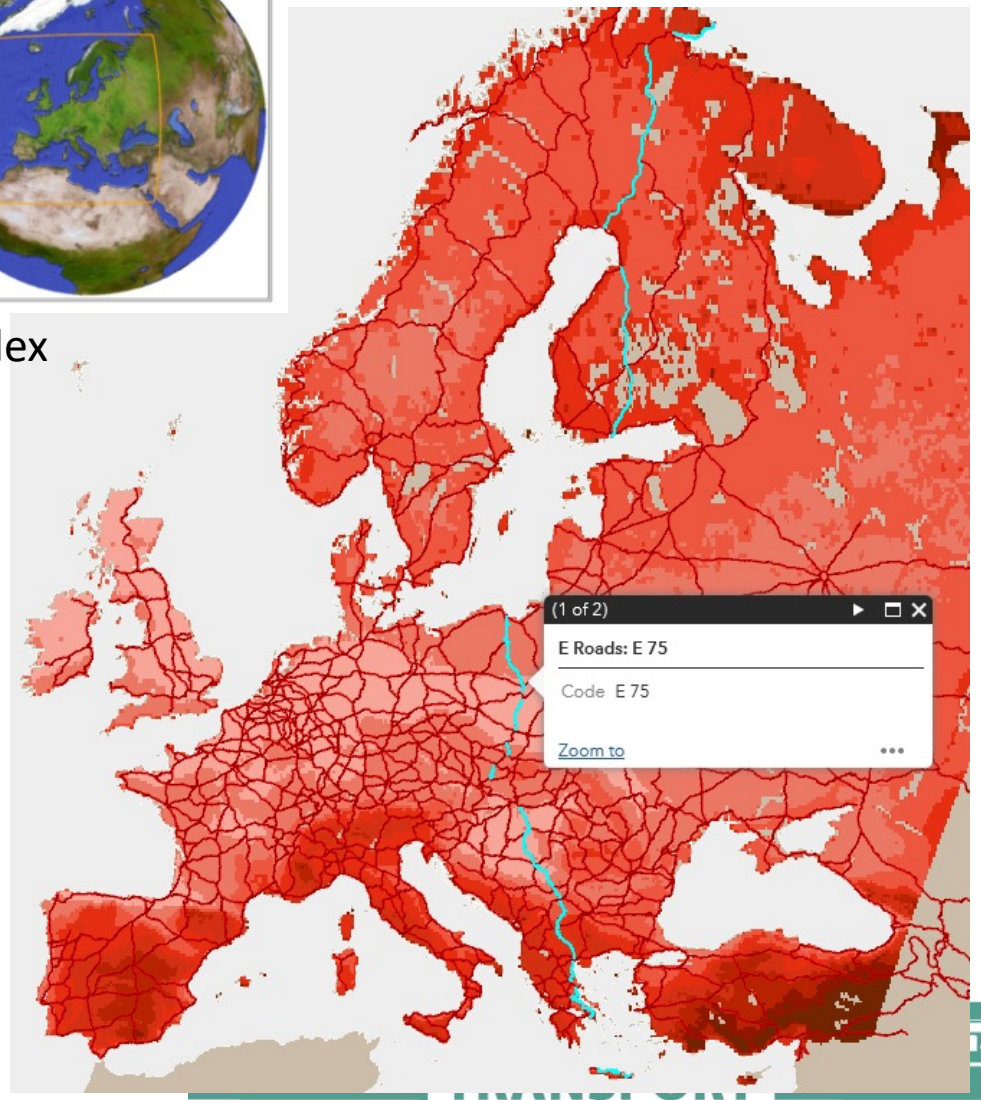


TRANSPORT

Attempt to understand the future impacts



Cordex

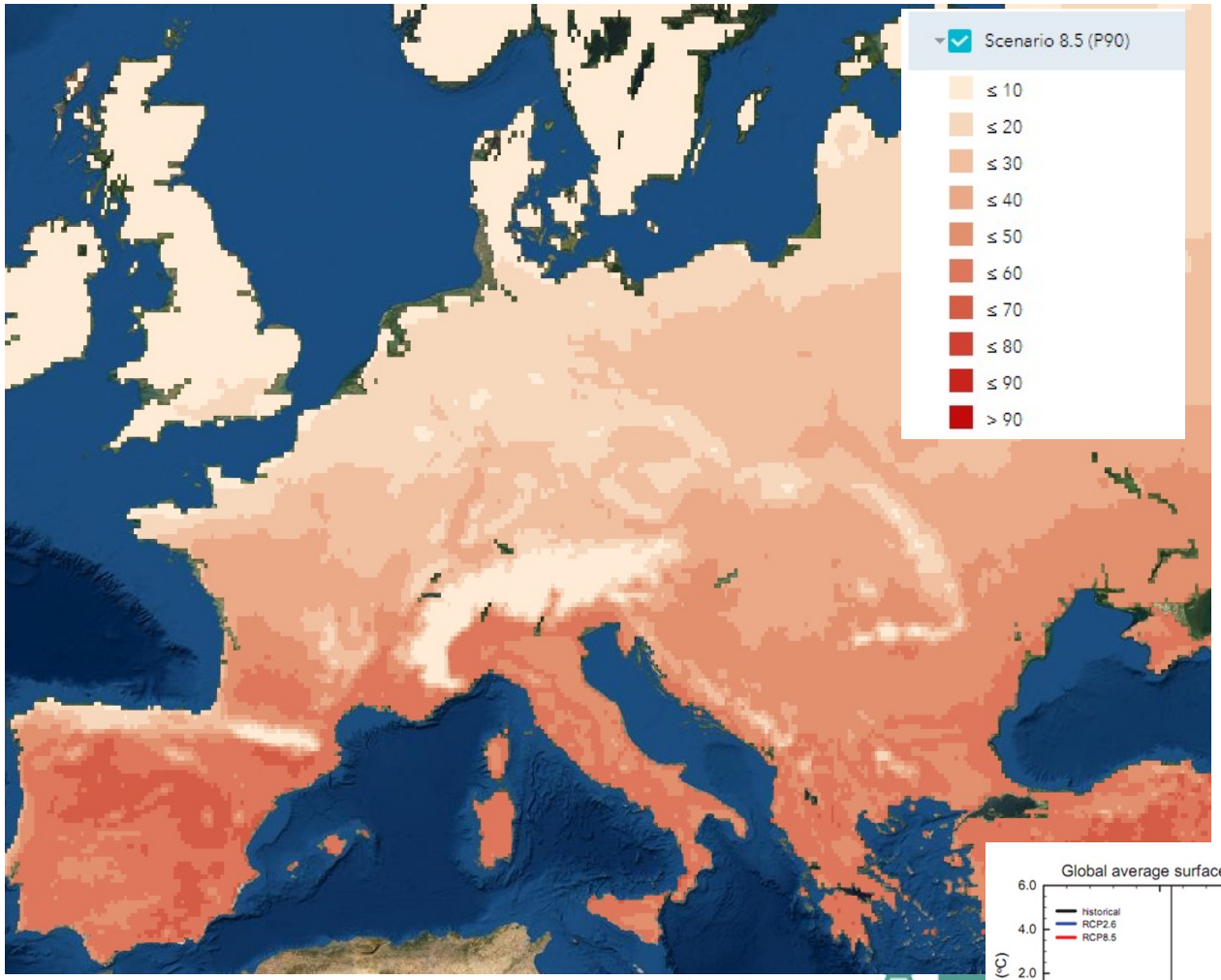


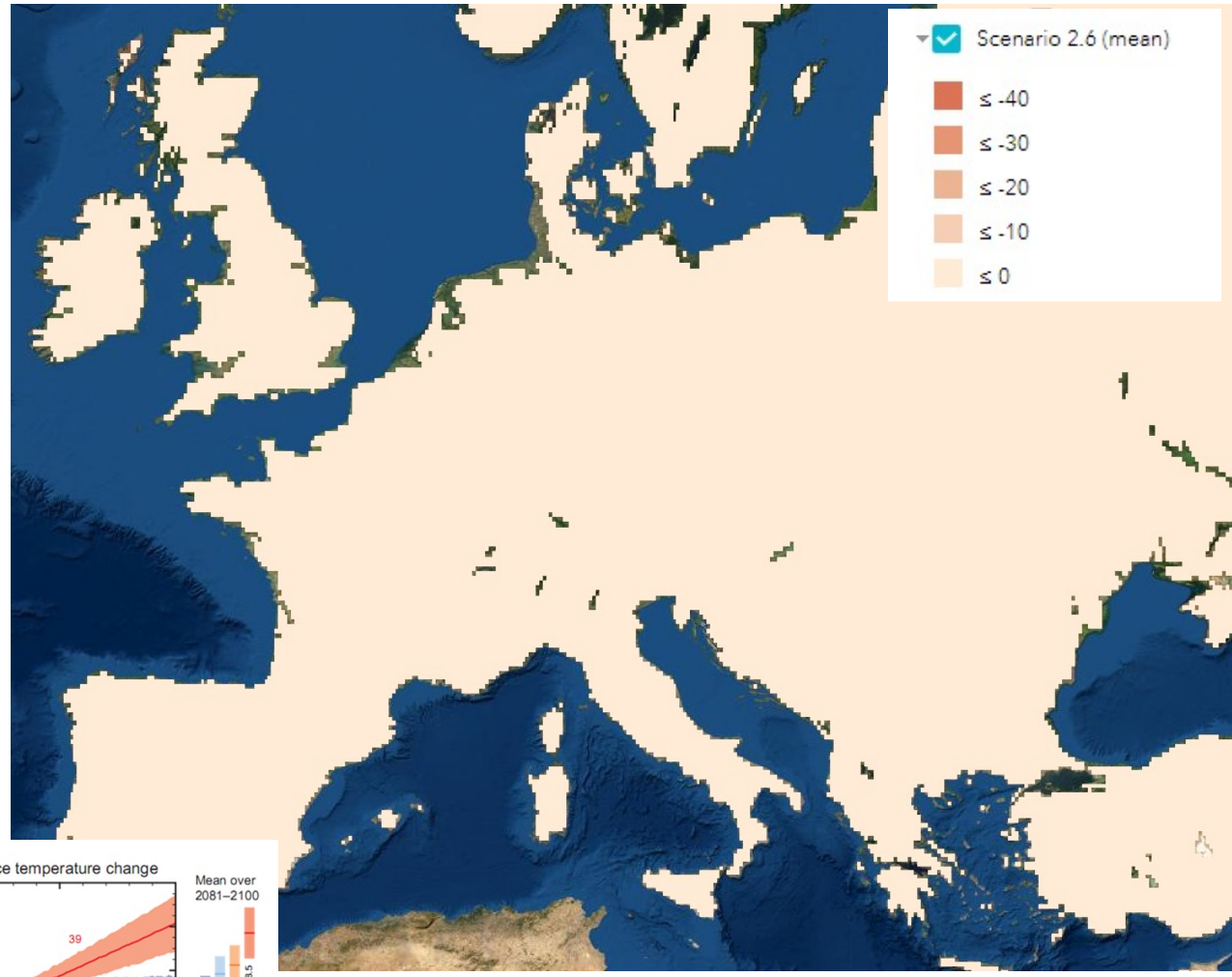
Heatwave	Heat on rail and road	Permafrost thaw
Warm spell duration index Annual count of days with at least 6 consecutive days when daily max. temp. > 90th percentile	**Number of very hot days** Annual count of days when daily maximum temperature > 30°C	**Number of icing days** Annual count of days when daily maximum temperature < 0°C
Road and rail networks	Rail and road networks	Road network

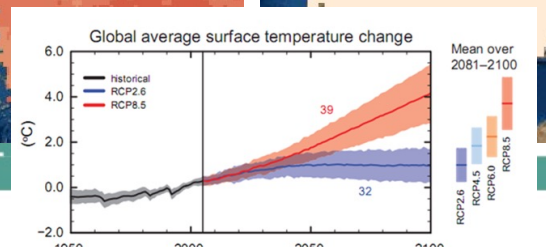
Downpours / flashfloods	Flooding	Low river flow
R20mm Annual count of days when precipitation is > 20mm	**Rx5day** Maximum 5-day consecutive precipitation amount	**Maximum length of dry spell** Maximum number of consecutive days when daily precipitation is < 1 mm
Road and rail networks	Road and rail networks	Waterways

Attempt to understand the future impacts

Example of expected changes in the number of very hot days



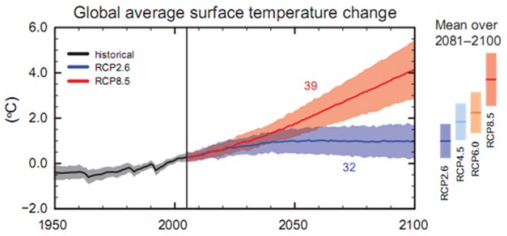


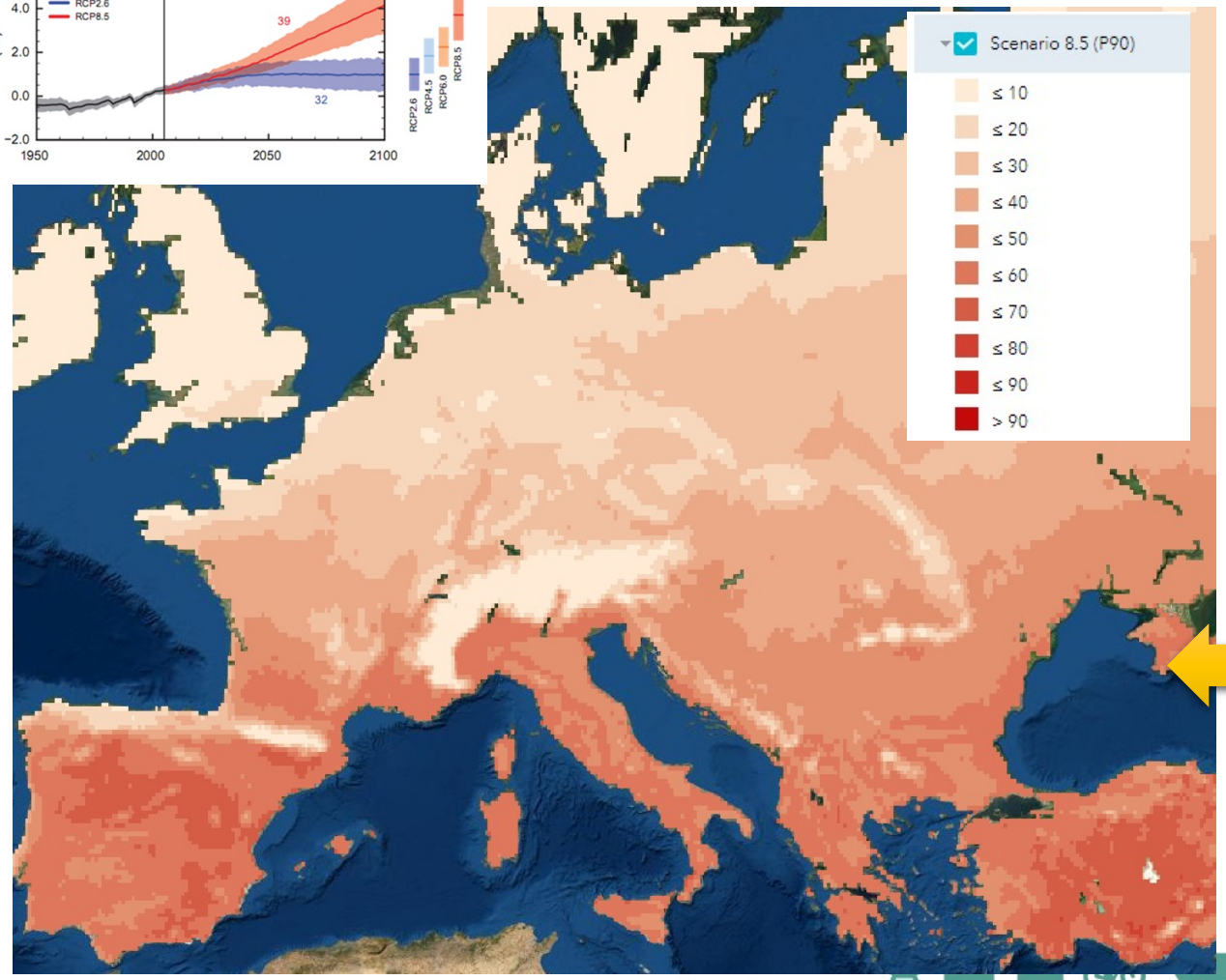


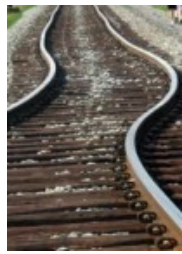
TRANSPORT

Attempt to understand the future impacts

Example of expected changes in the number of very hot days



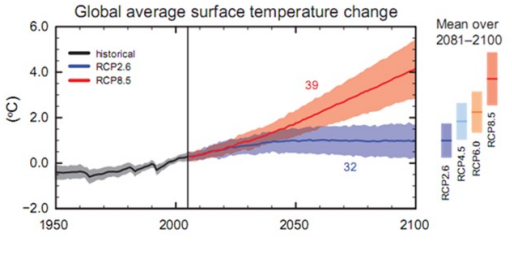


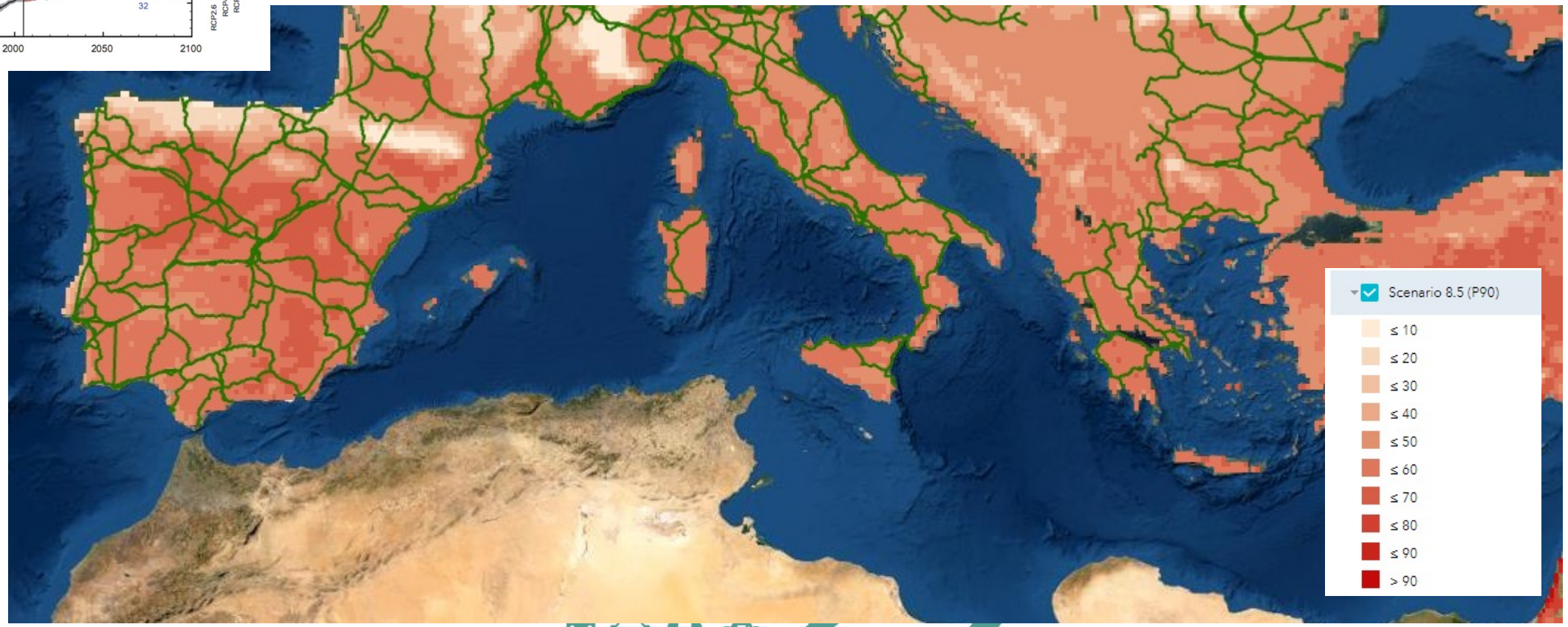


TRANSPORT

Attempt to understand the future impacts

Example of expected changes in the number of very hot days

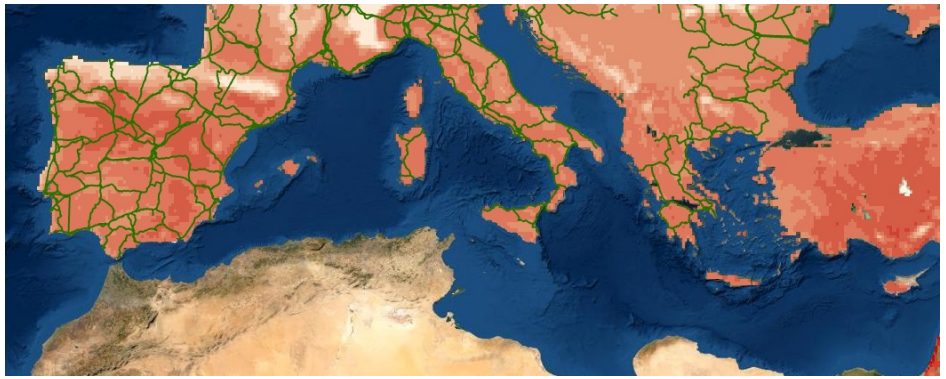




TRANSPORT

Attempt to understand the future impacts

Example of expected changes in the number of very hot days

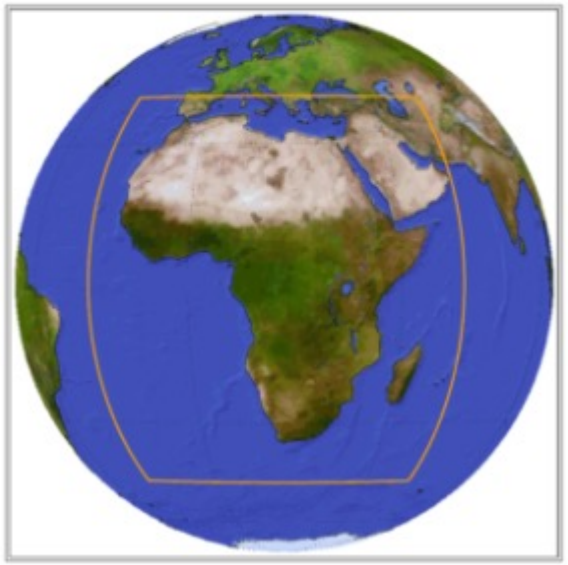


Analysis

- Design thresholds and number of failures at the network today (asset failure/operations) at given temperatures
- Consideration of projected/modelled changes
- Adaptation need?
- What will be the consequences in case of no adaptation (cost of adaptation vs cost of disruption/repair of damage) / network criticality

Attempt to understand the future impacts in Africa

Region 5: Africa

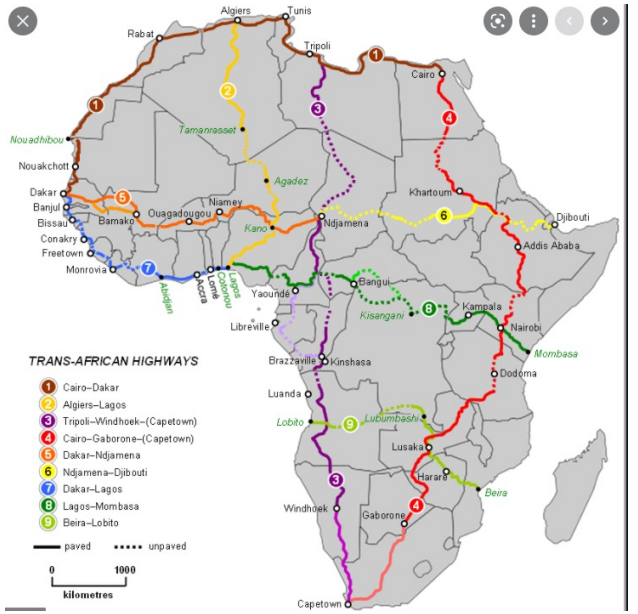


Dynamic downscaling of outputs from global climate models to regional climate models

Impacts of interests?

Calculation of indices as proxies for impacts

Maps with projections



Maps with networks

Activities of the UNECE Group of Experts on Assessment of Climate Change Impacts and Adaptation for Inland Transport

- Identification of climate impacts of interests to transport professionals – maps for entire UNECE region
- Identification of climate impacts of interests to transport professionals – maps for a selected corridor/geographical area
- Impacts => proxy indices / stress tests => analysis (thresholds) (network criticality)
  - ⇒ Resource material around understanding changing thresholds
  - ⇒ Guidance on criticality assessment / criticality indicators
  - ⇒ Guidance around stress tests
- Review of national projects
- Assessment of socioeconomic impacts and implications (business case for adaptation)
- Development of support tools

The Group of Experts is open to participation of interested experts from any United Nations member state

Uganda National Roads Authority

PIARC

Technical Committee 1.4: Climate Change and Resilience of Road Networks

INTERNATIONAL SEMINAR: CLIMATE CHANGE ADAPTATION AND RESILIENCE OF ROAD NETWORKS (IN LOW AND MIDDLE INCOME COUNTRIES)

SAVE THE DATE!

VIRTUAL SEMINAR, 6-8 DECEMBER 2021, HOSTED IN KAMPALA, UGANDA (14.00 – 17.00 EAT)

CLIMATE CHANGE IMPACTS AND ALL-HAZARD EVENTS ARE CAUSING MORE FREQUENT AND SEVERE DAMAGE TO ROAD INFRASTRUCTURE AND OPERATIONS.

THE SEMINAR WILL SHARE WAYS ROAD AND TRANSPORTATION AGENCIES AROUND THE WORLD ARE MAKING TRANSPORTATION INFRASTRUCTURE MORE RESILIENT TO CLIMATE CHANGE.

THE GOAL IS TO EXCHANGE INFORMATION BETWEEN COUNTRIES, WITH A FOCUS ON SUB-SAHARAN AFRICA.

WHAT ARE THE THREATS AND THE OPPORTUNITIES?

HOW CAN ADAPTATION AND RESILIENCE APPROACHES HELP ASSET OWNERS/MANAGERS TO BUILD, OPERATE AND MAINTAIN THEIR ROAD NETWORKS?

WHAT ARE THE STRATEGIES AND TOOLS TO INCREASE RESILIENCE?

AND LOTS MORE ISSUES TO BE DISCUSSED!

UNECE

INFRASTRUCTURE RISK, VULNERABILITY, AND RESILIENCE

IMPACT OF CLIMATE CHANGE, ALL-HAZARDS AND ENVIRONMENTAL THREATS ON ROAD INFRASTRUCTURE AND OPERATIONS

BUILDING CAPACITY FOR ADAPTATION ECONOMIC, SOCIAL AND ENVIRONMENTAL ASPECTS OF RESILIENCE

ADAPTATION FRAMEWORKS, STRATEGIES, METHODOLOGIES AND TOOLS (INCLUDING REFINEMENTS TO THE PIARC INTERNATIONAL CLIMATE CHANGE ADAPTATION FRAMEWORK)

IMPACTS OF COVID-19 ON RESILIENCE

THE UGANDA NATIONAL ROADS AUTHORITY, AND PIARC TECHNICAL COMMITTEE 1.4 ARE CO-SPONSORING THE SEMINAR.

PARTICIPATION IS OPEN TO PARTICIPANTS FROM ALL COUNTRIES. PARTICIPANTS WILL BE DRAWN FROM THE PUBLIC AND PRIVATE SECTORS, ACADEMIA, AND WIDER SUPPLY CHAIN STAKEHOLDERS

THE OFFICIAL LANGUAGES OF THE SEMINAR ARE ENGLISH, FRENCH AND SPANISH, AND THERE WILL BE SIMULTANEOUS INTERPRETATION AMONG THEM.

THERE IS NO COST TO PARTICIPATE BUT REGISTRATION WILL BE REQUIRED.

TO REGISTER YOUR INTEREST PLEASE CONTACT

Mark Henry Rubarenzya: Mark.Rubarenzya@unra.go.ug or Caroline Evans: cevans@ntc.gov.au

On a different topic – Policies to enhance transport connectivity and achievement of SDGs

https://unece.org/sites/default/files/2021-05/2017186_E_web.pdf

Role of governments in freight and logistics sector:

- Stable conditions for doing business
- Infrastructure and networks
- High-level objectives
- Strategic geographical location

On a different topic – Policies to enhance transport connectivity and achievement of SDGs

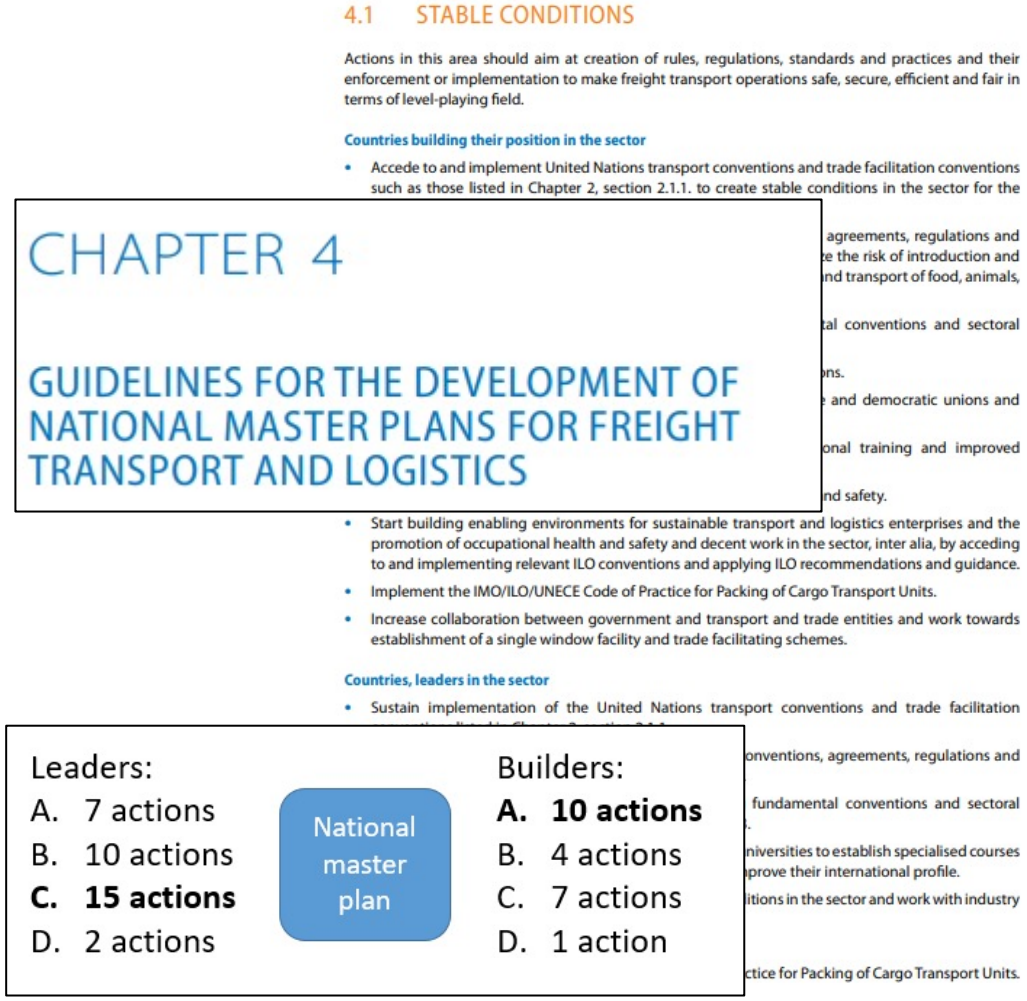
Role of governments in freight and logistics sector:

A. Stable conditions for doing business

B. Infrastructure and networks

C. High-level objectives

D. Strategic geographical location



4.1 STABLE CONDITIONS

Actions in this area should aim at creation of rules, regulations, standards and practices and their enforcement or implementation to make freight transport operations safe, secure, efficient and fair in terms of level-playing field.

Countries building their position in the sector

- Accede to and implement United Nations transport conventions and trade facilitation conventions such as those listed in Chapter 2, section 2.1.1. to create stable conditions in the sector for the

CHAPTER 4

GUIDELINES FOR THE DEVELOPMENT OF NATIONAL MASTER PLANS FOR FREIGHT TRANSPORT AND LOGISTICS

- Start building enabling environments for sustainable transport and logistics enterprises and the promotion of occupational health and safety and decent work in the sector, inter alia, by acceding to and implementing relevant ILO conventions and applying ILO recommendations and guidance.
- Implement the IMO/ILO/UNECE Code of Practice for Packing of Cargo Transport Units.
- Increase collaboration between government and transport and trade entities and work towards establishment of a single window facility and trade facilitating schemes.

Countries, leaders in the sector

- Sustain implementation of the United Nations transport conventions and trade facilitation

Leaders:
A. 7 actions
B. 10 actions
C. 15 actions
D. 2 actions

National master plan

Builders:
A. 10 actions
B. 4 actions
C. 7 actions
D. 1 action

TRANSPORT

On a different topic – Policies to enhance transport connectivity and achievement of SDGs

Role of governments in freight and logistics sector:

A. Stable conditions for doing business

B. Infrastructure and networks

C. High-level objectives

D. Strategic geographical location

CHAPTER 5

POLICY MEASURES IN SUPPORT OF THE IMPLEMENTATION OF THE NATIONAL MASTER PLANS

5.1 STABLE CONDITIONS

Accession to and implementation of United Nations transport conventions and trade facilitation conventions/Sustained implementation of United Nations transport conventions and trade facilitation conventions

Example of measures:

- Adequate transposition of the conventions' provisions into national legislation is the necessary step towards the implementation of the conventions.
- Establishment of heavy goods vehicle centres along main corridors can help prevent fraud by road hauliers in terms of vehicle safety, loading, driver rest time periods. Thanks to such control measures road safety for goods vehicles can be strengthened. Also, the level-playing field for road hauliers is supported.
- Vehicle checks and evaluation of results of the checks – hence strengthened enforcement – can lead to improvements of work conditions in road haulage sector.

Accession to and implementation of the sanitary and phytosanitary conventions, agreements, regulations and standards/Sustained implementation of sanitary and phytosanitary conventions, agreements, regulations and standards

Example of measures:

- Application of international standards, harmonised sanitary and phytosanitary measures and establishment of a strong inter agency and public-private collaboration platform helps enhance the assessment and management of sanitary and phytosanitary risks in the interests of safe trade

A. Stable conditions	=>	35+ examples of policy measures
B. Infrastructure & networks	=>	15 examples
C. High-level objectives	=>	20+ examples
D. Strategic geographical location	=>	4 examples

On a different topic – Policies to enhance transport connectivity and achievement of SDGs

Geneva and online 20 October 2021: Workshop in the framework of the annual session of the Working Party on Intermodal Transport and Logistics

Recent actions and projects in support of the sustainable development of intermodal transport and logistics

Thank you

Lukasz.Wyrowski@un.org