

Climate Change Adaptation: impact and requirements for the rail sector

Adaptation of Transport Networks to Climate Change, 25 June 2012, Alexandroupolis

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- **2009 Adaptation White Paper:** make EU more climate resilient
 - Mainstream adaptation into EU policies
 - Define a EU adaptation strategy
 - Introduce climate change adaptation requirements for EU financing

- **2013 EU Adaptation Strategy:** roadmap to make EU climate resilient
 - Assess costs, benefits and impact of adaptation
 - enhance knowledge
 - foster the use of standards and guidelines
 - collect and share best practices

- 2011 Transport White Paper: ambitious goals for rail
 - Rail : backbone of EU transport system
 - By 2050: complete a EU high speed network
 - By 2030: functional, multimodal TEN-T core network
 - By 2050: high quality and capacity network



- Hotter summers, wetter winters, sudden switch of seasons
 - Increased traffic disruptions
 - Increased energy consumption for airco in summer
 - High wind causing trains to blow over or loss contact with overhead wire
- Bigger impact expected in next 2-3 decades
- How to get prepared?
 - Climate change adaptation strategy
 - Maintenance plans
 - Vulnerability mapping
 - Climate change requirements in call for tenders for rolling stock



The strategy provides an agreed framework to the European rail industry that matches the overarching political priorities

■ Target 2020

Reduction of specific **CO2 emissions** from train operation by **30%** compared to 1990

■ Target 2030

Reduction of specific **CO2 emissions** from train operation by **50%** compared to 1990

Reduction of specific final **energy consumption** from train operation by **30%** compared to the base year 1990

■ Vision 2050

Strive towards **Carbon-free** train operations

Strive towards halving the specific final **energy consumption** from train operation compared to 1990

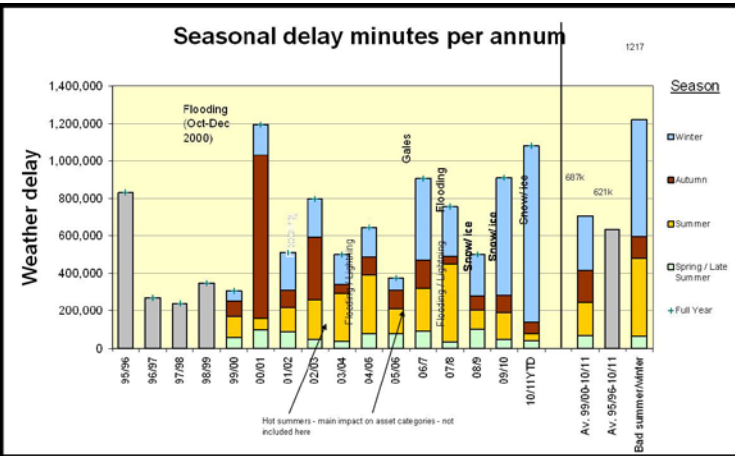
- CER launched dedicated adaptation working group
 - What is needed now?
 - Have reliable climate forecasting,
 - Exchange best practices
 - Integrate climate change requirements into standards and funding

- Cooperation with existing initiatives
 - EU Adaptation Steering Group
 - EU research projects
 - Partner of the UN Adaptation Private Sector Initiative
 - Sectoral workshop held on 19 April 2012

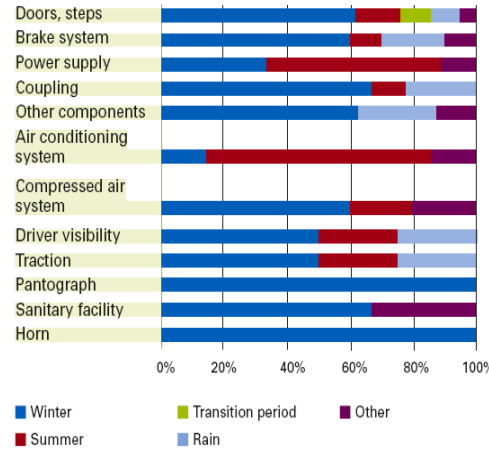
Railway system adaptation: from research to strategy



The Voice of European Railways



Tomorrow's Railway and Climate Change Adaptation, Network Rail



Source: Climatic Wind Tunnel Vienna

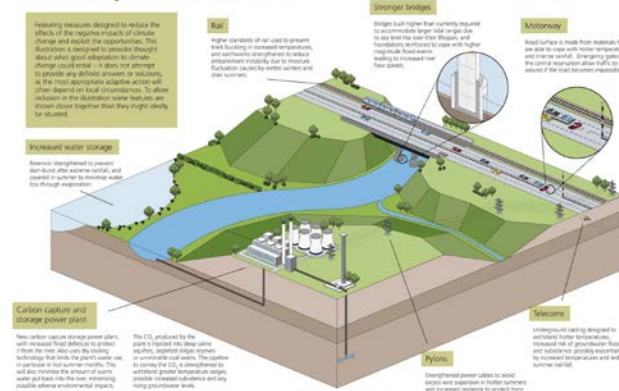


SNCF Adaptation Strategy



Climatic and air resistance tests at Rail Tec Arsenal in Vienna

2030s Major Infrastructure



UK Department for Environment Food and Rural Affairs

ARISCC: two-year project funded by UIC members

- European scope
- Aims
 - Find and disseminate good practice for weather event / natural hazard management
 - Find good examples of how railways are assessing infrastructure vulnerability
 - Understand how railways can incorporate longer term climate predictions into infrastructure management and planning process
 - Propose new management approaches to bring these issues together
 - Disseminate results

- ARISCC provides a broad collection of good practice examples for integrated natural hazard management
- www.ariscc.org

Area covered	Number of good practice
Weather Warning	3
Event Recording/Database	6
Impact Assessment	5
Vulnerability Mapping	5
Risc Assessment & Risk Management	10
Asset inventory	4
Asset Management	3
Regional Climate Modelling	2

Risk analysis for railway route	S	Drainage Engineers' network	UK	Bridge Scour Monitoring System	CH
Inventory of Drainage System (culverts)	S	Network Rail Dedicated Weather Website	UK	Vulnerability maps	CAN
High Speed Rail Service for Sweden	S	Track Buckle Risk Management	UK	CC Adaptation for London's Transport System	UK
Risk Models & Risk Assessment	S	Water Risk on Earthworks Assessment	UK	UKCIP2009 – Climate Projections	UK
Copenhagen-Ringsted CC Impact Assessment	DK	INFRA.wetter	A	FUTURENET	UK
DB Süd Weather Information & Warning	D	Event database (incidents and damage)	A	The Financial Risk of Climate Change	UK
Analysis Delays vs. Extreme Weather Events	D	Full scale asset inventory	A	Klima Atlas	D
Dedicated Weather Warning System	FIN	Vulnerability maps	A	Paramount	EC
Online Wind Monitoring at East coast Main Line	UK	Mapping of potential hazards	CH	CALAR	EC
Assessment of coastal defenses at Dawlish	UK	Natural Hazard Event Maps (per year)	CH	Monitor I	EC
Drainage integrated policy	UK	Vulnerability Maps	CH	Monitor II	EC
TraCCa	UK	Event database & evaluation + GIS	CH	RIMADIMA	EC



Infrastructure

- Power Supply (incl. Catenary)
- Permanent way
- Earthworks
- Bridges, Water ducts, tunnels

Rolling Stock

- Loco-pulled, EMU, DMU

Train Control and Command Systems,

Subsystems and their interaction

- **TEN-T Reform / Connecting Europe Facility**
 - Additional 10% co-financing rate for actions enhancing climate resilience
- **Cohesion Policy**
- **Horizon 2020 - The Framework Programme for Research and Innovation (2014 - 2020)**



Enhance, together, the resilience of rail to climate change!



The Voice of European Railways

- Foster exchange of **best practices**
- Develop **links** between existing initiatives
- **Mainstream adaptation** into key EU policies and standards
- Ensure greater visibility and availability of **EU funding**
- Encourage Member States to define **national adaptation plan**

Join the CER second sectorial workshop in Spring 2013!



Thank you for your attention!



The Voice of European Railways

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