Climate Resilience Screening

JASPERS Case Study: Modernisation of railway line border - Kúty to Bratislava (Slovakia)

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Overview

• **Wider assignment background:** EIB climate resilience screening
• **Project background:** Modernisation of railway line border - Kúty to Bratislava (Slovakia)
• **Our approach, findings and learning:** Identifying and responding to climate resilience issues
What is climate resilience screening?

Analysing a project to identify:

• Whether the concepts are vulnerable to climate change
• Whether climate risks have been taken into consideration
• Whether plans could lead to increased vulnerability
• What steps are needed to reduce risks and associated costs

*ADB (2009) Understanding and Responding to Climate Change in Asia*
Project background

**Technical detail:** Modernisation of two sections of railway line and equipment of the line (48.2 km)

- Increase of track speed up to 200km/h
- Pass-ability for kinematic gauge of vehicle and structure gauge
- Load capacity of track superstructure and supporting strength of sleeper bed
- Resistance of bridges to operational loads and spatial adjustments
- New railway bridges
- Reconstruction of railway stations
- Closure of level crossings and construction of overpasses and underpasses
- Complete modernization of catenary system
- Noise barriers
- ETCS L2 from state borders with Czech republic to Bratislava
Project background

Progress

- **Feasibility study** – completed in 2015
- **EIA status** - in development
- **Territorial decision** - in development
- **Property/settlements** - no impact
- **Building permits** – n/a
- **Public tender documentation** - procurement for designer late 2016
- **Justification** - Ensure interoperability of the line
- **Estimated timetable for project implementation** - 2017-2020
- **Estimated cost** - €359 mil.
Our approach

Stage one: initial assessment of potential climate vulnerability

- **Aim**: ‘Set out climate vulnerability’ context
  - MDB Adaptation Finance Tracking Methodology Step One
  - EUFIWACC (2016) Integrating Climate Change Information and Adaptation in Project Development

- Rapid assessment by climate change adaptation expert and transport expert
  - **Project context** - Review of supporting documentation (feasibility study)

- Determination support by short evidence (data and literature) review:
  - **Sector (rail) climate risks** - Lack of “Climate Risks to Slovak Rail Infrastructure”. International Union of Railways & Rail Safety and Standards Board (UK)
  - **Geographic (Slovakia) climate risks** - National adaptation strategy (or NAP); national impacts, vulnerability and adaptation assessments; research programs; met office; national communications to UNFCCC (mixed results)
Findings

Temperature extremes

- **Climate:**
  - summer mean daily maximum temperature 28°C (1981 to 2012)
  - highest recorded maximum temperature 40.3 °C (2007)
  - winter mean daily minimum temperature -2.8°C (1981 to 2012)
  - lowest recorded minimum temperature was -41°C (1929)
  - Observed and projected trend: ↑

- **Potential impacts:** rail buckling, ice loading, wild fires, reduced rated capacity of lines and load shedding, increased maintenance requirement, operational impacts…

Flooding

- **Climate:**
  - extreme flooding in May and June 2010 causing €337 million of damage
  - over the last 20 years there has been a significant increase in extreme daily precipitation totals, prolonged heavy rain events, and associated flooding. Trend expected to continue over time

- **Potential impacts:** inundation, water scour, loss of infrastructure, operational impacts…
Findings

Subsidence and landslips

- **Climate:**
  - 67,210m of rail lines threatened by slope deformations in Slovakia
  - Increasing risk

- **Potential impacts** – Damage and operation impacts from earthworks desiccation or scour, landslip, rock fall…

Storms and high winds

- **Climate**
  - Mountainous areas vulnerable to high winds
  - Highest wind speed recorded: 78.6 m/s (Skalnaté Pleso, 1949)
  - Future increase in frequency and severity?

- **Potential impacts** – Loading, loss and damage, operational impacts
Our approach/findings

Stage two: initial risk classification and recommends further action

• Engagement with JASPERS team
  – Climate change and transport
  – Project resilience - feasibility study
  – Opportunity for adaptation - project programme

• Risk classification: Significant climate resilience issues identified. Further action required

• Action: CONFIRM/ CLARIFY: confirm resilience of measures or provide more information.
Our approach/findings

Stage three: re-classification of risk and recommendations for further action

- Climate resilience screening workshop with JASPERS team and beneficiary
  - Review projects specific climate vulnerability and resilience
  - Agree further action, as required

- Risk classification: Significant climate resilience issues identified. Further action required:
  - Flooding
  - Subsidence and landslips

- Action: Further assessment required (CRVA) – included in design ToR

- Risk classification: Significant climate resilience issues identified. Adequate level of climate resilience:
  - Temperature extremes
  - Storms and high winds

- Action: Ask beneficiary to confirm or commit to management measures and/or conditions
Learning

Challenges
• Lack of framework for screening
• Lack of “Climate Risks to Slovak Rail Infrastructure”
• Comprehensive understanding of the project context
• Uncertainty and complexity of the issue

Solutions
• MDB Three Steps/EUFIWACC guidance
• International/regional best practice, climate change expertise, tools(?)
• Continuous communication and engagement (meetings and workshops)
• Keep it simple and focus on significant potential impacts and responses
For info or further questions on this seminar and the activities of the JASPERS Networking Platform, please contact:

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