Veger og klimaendringer

Et utvalg internasjonale aktiviteter

Foto: Knut Opeide
EU–USA Symposium «Adaptation to Climate Change and Extreme Weather Events”
EU–USA Symposium

Main features

- 4th symposium of this kind
- City logistics, Transport research implementation, Road transport automation opportunities
Main features

- **Organizers**: European Commission (EC), US Transportation Research Board (TRB) and US Department for Transportation (US DOT)
- **Chair** Prof Alan McKinnon, Kühne Logistics University, Kiel,
  **Co–chair** Prof Richard Wright, Univ of Maryland
- **Planning committee**: 3 EU + 3 US + organisers
- 50 participants altogether

- Preliminary paper – provided by US partners
- Symposium white paper – by Gerry Schwartz (US) and Lóri Tavasszy (EU)

11.08.2016
EU–USA Symposium

Goals of the Symposium

- Review the current state of research in the field: identify gaps and hot topics
- **Stimulate more research**: redress the mitigation / adaptation imbalance
- Provide guidance on future research agenda for adaptation studies
- Foster **trans–Atlantic research collaboration** in this field
- Promote **cross–disciplinary research**: break down subject siloes
- Increase relevance and impact of the research: practitioner engagement
Specialisms, Transport Modes and Countries Represented at the Symposium

Subjects:
- Climate science
- Civil engineering
- Transport planning
- Risk analysis
- Economics
- Decision theory
- Logistics
- Hydrology
- Insurance
- Public policy
- Coastal adaptation
- Infrastructure design, construction, maintenance and management

Transport modes:
- Highways
- Aviation
- Rail
- Ports
- Public transit
- Shipping
- Inland waterways

Map of United States + 14 European countries

PPT: Alan McKinnon, Kühne University
Scope of the Symposium

- Nature of the risk:
  - Climate change
  - Extreme weather

- Nature of the impact:
  - Excess rainfall / flooding
  - Extreme heat / drought
  - Hurricanes / storms
  - Sea level rise

- Extent of the impact:
  - Transport infrastructure
  - Transport operations / services
  - Related critical infrastructures
  - Socio-economic impacts

- Transport mode:
  - Road
  - Rail
  - Inland waterways
  - Ports
  - Aviation
  - Inter-modal

- Time frame:
  - Short / medium / long term
  - 2020 / 2050 / 2100

- Geography:
  - Urban
  - Inter-urban
  - Regional
  - National

Conceptual and analytical frameworks:
- Methodologies
- Technologies
- Governance structures

Developing / refining research agendas
### EU–USA Symposium

#### Work plan & structure

<table>
<thead>
<tr>
<th>Avoiding disruption</th>
<th>Handling disruption</th>
<th>Recovering after disruption</th>
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</thead>
<tbody>
<tr>
<td>Planning</td>
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<td>Infrastructure</td>
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<td>Operation</td>
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<tr>
<td>Social economics</td>
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</tbody>
</table>

- Case study: sea level rise
- Case study: floods
- Case study: heat wave

>>> Topics for research and collaboration!!

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State of adaptation

- **Global reports:**
  - US and 5 EU countries in Adaptation Top 10
  - mostly work on groundwork activities (frameworks, tooling, data) and little on implementation

- **Consensus on R&D needs**
  - *Need for integrative research*
  - Specific substantive gaps
    - Costing methods and statistics for specific cases;
    - Impacts of the new high end scenarios of climate change;
    - Rural development, including resilience of cultural landscapes;
    - Information needed to manage agricultural and forestry systems
  - Methodological work; regional level
How to achieve resilience: issues

1. Define objectives, acquire practice in the design of measures
2. Improve sense-and-respond capabilities
3. Address system resilience (cross-modal, cross-sectoral...)
4. Adopt planning approaches for climate resilience
5. Implement risk-based approaches to managing assets
6. Address impacts from social and physical perspective
Preliminary conclusions


Some key points:

● The need to upgrade methods of risk management in the transport sector.

● The vulnerability of our transport infrastructure has to be carefully assessed and mapped, taking account of inter–connections with other critical infrastructures, particularly the electricity grid and communication network.
Conference of European Road Directors
CEDR Transnational Research Programme – Climate change
Annual Calls for Proposals since 2008

- Climate Change (2008)
- Road Safety (2009)
- Asset Management (2010)
- Call 2011
- Call 2012
- Call 2013
- Call 2014
- Call 2015
How are calls prepared?

1. **Proposal of broad topics** (e.g. “Climate Change”). Proposed by TG Research for each annual call and approved by CEDR GB.

2. **Identify specific research needs** within these topics (e.g. “risk management methods”), determined through consultation.

3. **Thematic workshops**: NRA experts on specific research areas produce basis for **Descriptions of Research Needs (DoRNS)**.

4. **DoRNs then written** by Task Forces, whose members are proposed by Thematic Workshops and approved by TG Research. Each DoRN defines a research programme and its contents are confidential until launch of Call.
What value does the TRP bring to CEDR?

Requirements of road administrations

- International best practice
- Better value for money
- Improved quality of research
- Reduced duplication of research
- Sharing experience
- Wider choice of supplier
Objective

Aimed at providing road authorities all across Europe with the knowledge and tools necessary to "get to grips" with climate change and its effects on all elements of road management by adapting design rules, updating and improving data collection, and developing risk management methods.
4 Selected Projects

- **RIMAROCC** (SE, FR, NL, NO)
  - Risk Management for Roads in Climate Change

- **SWAMP** (DK, SE)
  - Storm Water Prevention - Methods to predict damage from the water stream in and near road pavements

- **IRWIN** (FI, SE)
  - Improved local Road Winter Index to assess maintenance needs adaptation costs in climate

- **P2R2C2** (UK, SI, NO, FI)
  - Pavement Performance and Remidation Requirements following Climate Change
Objective

To provide owners with adaptation technologies and the models and tools to support decision-making concerning adaptation measures for the road infrastructure.
ROADAPT scope

1. Context analysis
2. Risk identification
3. Risk analysis
4. Risk evaluation
5. Risk mitigation
6. Implementation of plans
7. Monitoring, review

Feedback loop

ROADAPT
Roads for today, adapted for tomorrow

Guideline on the use of data for the current and future climate
Cause

Guideline on performing a GIS-aided vulnerability assessment
Effect

Guideline on performing a socio economic impact analysis
Consequence

Guideline on performing a quickscan (preliminary climate change risk assessment)

Overview of adaptation measures and guideline on choosing a strategy
Risk mitigation

Integrated with RIMAROC framework
CEDR – Transnational research Programme
2015: «Climate Change – From Desk to Road»

Objective

Implementation!

+++

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Call 2015: Climate Change: From desk to road

- Economic costs associated with integrating climate change into decision-making
- Embedding climate change into practice and procurement
- Transnational approach to water management
- Diagnosing driver decision-making in a changing climate

- Funded by Germany, Netherlands, Ireland, Norway, Sweden, Austria

- Objective: Integrate Climate Change into decision-making processes through implementation of research

- Total budget EUR 1.050million: Available budget EUR 0.900million
### Financial Commitments for CEDR Call 2015

<table>
<thead>
<tr>
<th>Road administration</th>
<th>A: Climate Change</th>
<th>B: Freight &amp;</th>
<th>C: User Needs</th>
<th>D: BIM</th>
<th>Total per NRA</th>
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Total commitment: 9 funding partners EUR 3,600 million
## Costs (estimated)

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<th>Amount</th>
<th>Percentage</th>
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<td>Dissemination</td>
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<tr>
<td>Contingency</td>
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<td><strong>Total</strong></td>
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<tr>
<td><strong>Research Budget</strong></td>
<td><strong>900,000</strong></td>
<td><strong>87.4%</strong></td>
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PIARC World Road Association

Technical Committee E «Climate Change, Environment and Disasters»

E.1 Adaptation Strategies/Resiliency
E.2 Environment Considerations in Road Projects and Operations
E.3 Disaster Management
Published in 2015, is being updated to:

- include feedback, experience from implementation
- test regarding existing adaptation measures and strategies
PIARCS TC E.1 Adaptation Strategies / Resiliency

CC Adaptation Framework

Stage 1: Identifying scope, variables, risk and data

Stage 2: Assessing and prioritising risk

Stage 3: Developing and selecting adaptation responses and strategies

Stage 4: Integrating findings into decision-making processes
Thank you!

Questions?

11.08.2016