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Transportation Research Procedia 14 (2016) 51 – 57

Transportation Research Procedia

www.elsevier.com/locate/procedia

6th Transport Research Arena April 18-21, 2016

Implementing climate change adaptation for European road administrations

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Abstract

International cooperation between national road owners can aid structuring and implementing climate change adaptation strategies throughout the European network. Climate change adaptation on roads can be defined as the concrete measures implemented to reduce vulnerability to more extreme weather phenomena in the future in order to increase resilience and robustness for continuous road safety and mobility. As evident in multiple scientific papers and authorities, such as the IPCC, climate change adaptation is gaining more general interest and political focus since actions of mitigation to climate change no longer seem to singlehandedly provide sufficient effect to future sustainable transportation on roads.

As with actions related to mitigating climate change, allocating resources to climate change adaptation and successfully anchoring this subject in an organization, e.g. a national road authority (NRA), can be a highly demanding task which oftentimes can be overwhelming in its nature. Implementation of climate change R&D projects, alone, is a topic where interdisciplinary approaches are of high request, regularly resulting in time-consuming processes with many potential pitfalls, politically and technically.

Therefore, the CEDR I4 group on mitigation and adapting to climate change has decided to have the following three topics as a combined objective to generate an outcome which will act as a template for organizations, e.g. NRAs, to initiate, develop, and/or complete climate change adaptation measures:

- Strategy and action plan
- Awareness
- Risk methodology approach

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Peer-review under responsibility of Road and Bridge Research Institute (IBDiM)
doi:10.1016/j.trpro.2016.05.040

The strategy template will focus on managing, improving, preventing and cooperation, and will provide specific examples on areas to study. These include examples of information to road users, incident management, implementation through planning phases, tools for risk analyses, legislative work, research and information sharing and many others. Likewise, a template for an action plan is provided, giving examples on how to ensure responsibility and anchor climate change adaptation in the organization in order to actually direct the organization towards a more climate-resilient profile. The organizational awareness of climate change adaptation in an interdisciplinary context is considered undeniably crucial in this regard, since this will form the basis on how to act and prioritize resources. Examples of known methodologies of climate change adaptation will be highlighted to act as inspirational examples. As an example, such methodologies include risk mapping, e.g. the Blue Spot model or the Quick Scan approach.

Peer-review under responsibility of Road and Bridge Research Institute (IBDiM)

Keywords: CEDR; Climate change adaptation; strategy; action plan; implementation

1. CEDR, Climate change adaptation

This paper will describe the CEDR I4 group working with climate change adaptation and mitigation and present how international cooperation between national road owners can aid structuring and implementing climate change adaptation work. The outcome will be available by CEDR in 2016.

1.1. CEDR, Working with climate change adaptation

CEDR (Conference of European Directors of Roads) is a European confederation of national road authorities (NRAs) that has as direct purpose to enable a direct channel of research, knowledge- and experience-sharing across European NRAs to analyze and debate matters related to road management in all its many and diverse aspects. One topic related to road management addressed by CEDR is climate change which, over recent years, has gained an increased attention and continues to do so. Addressing climate change is becoming a very important task in CEDR, as road owners see the consequences of changes as an increasing matter. This is highly due to climate change related consequences that oftentimes will compromise the key undertaking of NRAs; continuous safety and mobility on roads.

The current CEDR work program, Strategic Plan 3 (SP3), has a task group dedicated to working with climate change. However, working with climate change is not a unified topic; both mitigation and adaptation to climate change are sub-topics of working with climate change, albeit fundamentally dissimilar. Therefore, the task group is divided into two groups, respectively working with mitigation and adaptation. This paper will describe how the CEDR task group working with climate change addresses the latter sub-topic, climate change adaptation.

In short, climate change adaptation is the overall term for upgrading, ensuring and/or empowering items, mechanisms, infrastructure, etc. to be able to manage consequences of present and future climate conditions, which entail a higher frequency of extreme weather of diverse categories. Measures of climate change adaptation are oftentimes proactive in their nature.

Therefore, climate change adaptation is fundamentally dissimilar to climate change mitigation; mitigation measures strive to minimize the magnitude and impacts of climate change by introducing methodologies, legislations and/or reductions to lessen greenhouse gas emissions.

1.2. Why adapt roads to climate change?

Evidently, by following the trend in how leading scientific publications, e.g. from the IPCC report of 2007 to the report of 2013/2014, over recent decades and even years have modified likely climate scenarios, there is no repudiating that significant warmer climate scenarios are considered ever more expected. This trend is expressively linked to global inadequacy of timely and sufficient mitigation activities (IPCC, 2014). Consequently, the future climate is likely to be more than 2 ºC warmer on a global scale compared to the reference climate period ranging from 1961-1990 leading to unavoidable impacts (EU white paper, 2009).