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Economic Commission for Europe

Inland Transport Committee

Working Party on Transport Trends and Economics

**Group of Experts on Climate Change Impacts and
Adaptation for Transport Networks and Nodes**

Fifteenth session

Geneva, 18 and 19 December 2018

Item 4 of the provisional agenda

Discussions on the final report of the Group of Experts

Proposal for the further process and content of the report

Submitted by the Vice-Chair

A. Mandate & result

The ITC at its 80st session (19-23 February 2018), approved the request of the Working Party on Transport Trends and Economics (WP.5) to extend the mandate of the Group of Experts on Climate Change Impacts and Adaptation for Transport Networks and Nodes for one more year starting after the final approval by EXCOM, and report back to WP.5 in September 2019, based on the same terms of reference (ECE/TRANS/2015/6).

The chair strongly believes that we should strive to deliver our final report by that time. The report should contain clear conclusions based on the information available, which may possibly be not as concrete and conclusive as we hoped for and sometimes be more of a qualitative than a quantitative nature.

More concrete, our findings will likely not have the character of a blueprint, identifying exactly where and what threats or damage to infrastructure may occur because of our changing climate and which places are most at risk (hotspots). The resolution of climate models will however allow us to draw conclusions regarding the impact (risks) on infrastructure on a wider scale. This may be further specified if combined with an assessment of possible/relevant hazards in a region (for example: thaw of permafrost is unlikely to cause problems in southern countries) and information on the economic and/or social value of a connection. In this way high risk areas can be identified. We should make clear in an early stage that we interpret these high-risk areas to be the hotspots mentioned in the mandate.

In addition, it is recognized that for a part of the UNECE region high-resolution climate projections are available. This allows us to show, on a case-by-case basis, what conclusions are possible when more detailed information is available.

The combination of both may lead to a list of spots for priority action for the development of high-resolution climate scenarios, to be able to timely prepare for climate-induced damage to infrastructure.

As a result, the report may show two different levels: the focus will be on the wider scale (where we define a hotspot as a hot-area), completed by cases showing that more detailed projections are the basis for tailored solutions.

For the transport corridors with high economic and/or social value this may be a strong argument for priority action for the development of high resolution climate projections and scenarios, to be able to timely prepare for climate induced damage to infrastructure.

This is also important for the responsible project managers and decision makers, to know if their planning is reliable and economic regarding the whole life cycle of a construction.

It is recognized that this approach may differ from the expectations that we and members of WP.5 may have had at the beginning of our work. However, next to the concrete conclusions and findings that we can present, this could be one of the most outspoken findings of our work: the situation is more complex than thought on beforehand.

Viewed in this way, next to concrete conclusions, an important goal for our work is to contribute to further awareness raising. On the one hand regarding the complexity and gravity of the impacts of climate change on our infrastructure and, on the other hand, regarding the remaining uncertainties and that more detailed and reliable information is needed to get plan approval! As such, the report could also serve as the basis for the formulation of the need and challenges for further work.

Regarding the need for further awareness building, the representation of member states in de Group of Experts may serve as an indicator. Starting with a very limited representation, the

number of participants increased during the work. This may be a signal for the potential interest, to surface when more information becomes available.

The chair proposes to reflect on the above in the introduction of our report, by way of expectations management but also to place the report in a longer-term perspective. The work on adaptation and transport is not finished with our report: in a great part of the UNECE region more work is needed to provide a basis for action on climate change related risks on transport infrastructure.

B. Structure of the report

In the June meeting, the Group of Experts agreed that the initial outline of Group's final report should adapt to the new insights and ensure the maximum possible awareness raising. The Group has initially agreed to the following tentative structure of its final report:

- Ch 1: An overview of climate change phenomenology;
- Ch 2: Analysis of the questionnaires;
- Ch 3: National policies and good practices on adapting transport infrastructure to climate impacts;
- Ch 4: Hot Spots Maps
 - a. Case Studies: Countries may present a case study(ies) with hot spots in their territory;
 - b. UNECE – WMO Hot spots map analysis and presentation;
 - c. Generic Guidelines to Governments on how to prepare a hot spots map (conditions, parameters, indicators);
- Ch 5: Case studies on socio economic impacts – cost benefit analysis;
- Ch 6: Conclusions and Recommendations.

With respect to this outline, the chair proposes a slight revision of the structure to make a clear distinction between the cluster of scientific information and the cluster with country case studies. The new structure would look like:

I. PREAMBLE

- I.1 executive summary
- I.2 introduction

II. CLIMATE INFORMATION & INFRASTRUCTURE NETWORK

introduction

- II.1 an overview of climate change phenomenology (Ch 1)
- II.2 developments in climate modelling
- II.3 main transport connections
- II.4 high risk areas (= Hot Spots Map) (Ch 4b)

III. COUNTRY INFORMATION

introduction

- III.1 analysis of the questionnaires (Ch 2)
- III.2 national policies and good practices on adapting transport infrastructure to climate impacts (Ch 3)
- III.3 case studies on technological impacts in high risk areas (Ch4a)

III.4 case studies on socio economic impacts (Ch5)

IV. RECOMMENDATIONS AND CONCLUSIONS

IV.1 generic guidelines to Governments (Ch 4c)

IV.2 conclusions and recommendations (Ch 6)

(IV.3 agenda for further work)

We should be aware that advanced insights developed during the work on the report might lead to further adjustments.

I. PREAMBLE

I.1 Executive summary

Recapitulation of the main findings, including that detailed, location specific conclusions require further work, especially regarding high-resolution climate information and working in data scarce situations.

I.2 Introduction

- Quote the mandate and give record of the evolution of our insights regarding the (im)possibilities we encountered. Based on that we explain the goals of the report: conclusions as concrete as possible, awareness building, agenda for further work.
- Also, define that the emphasis of the report is on international connections with a high economic and/or social value. It is not the mandate of UNECE to draw up conclusions on policies and measures to act on climate change impacts on national infrastructure.
- Describe our interpretation of 'hotspot' with reference to the mandate, following the evolution of insights.
- Explain the structure of the report and pay tribute to the efforts and cooperation of WMO, UNFCCC, companies and countries.
- Maybe refer to the weak response on the questionnaire and the evolution in participation to indicate the importance of the report for further awareness building.

II. CLIMATE INFORMATION & INFRASTRUCTURE NETWORK

In the introduction of the chapter, we will give a short and general indication of climate models available: low resolution GCM-models covering the whole of the UNECE region and high-resolution regional models at the country scale.

II.1 general overview of climate change phenomenology

This part is the overview of IPCC findings as prepared by prof. Velegrakis. This may be completed by an analysis and interpretation in more detail, giving qualitative conclusions on possible changes in mean and extreme temperature, precipitation, wind and sea level rise, including uncertainty, for various parts of the UNECE region.

II.2 developments in climate modelling

This part will show developments in climate modeling, including on trends towards higher resolution, and what additional information this may deliver that will benefit of our work. To illustrate this, some examples for different regions could be added. If possible we might give an indication of the minimum resolution (50km?) needed to be able to draw location specific conclusions with an acceptable uncertainty. This part will include the information of WMO.

II.3 main transport connections

This part will comprise the map of main roads in the UNECE region and an indication of their economic and/or social value, possibly including an outlook on socio-economic developments of interest. This will be completed by an indication of vulnerability of the connection i.e. where will a blockage be disruptive because of lack of alternative routes.

We should be aware that for some areas it might be a challenge to map all the relevant characteristics of the infrastructure on a detailed scale.

II.4 high risk areas (= Hot Spots Map)

This is the conclusive part, combining the information of II.1 and II.3. This analysis leads to the presentation of the UNECE – WMO Hot Spots Map; the very core of the report.

Some expectations management may be necessary on the geographical resolution of the Map, since it is very likely that only areas of high risk can be identified (i.e. high value, poor alternative routes, increased climate risk) instead of specific spots, giving just a very general classification of the climate sensitivity of (parts of) the transport corridors.

Reference must be made to uncertainty in the conclusions, amongst others because of the low resolution of models and incomplete country information, what may explain why hotspots are areas, not points, where increased damage from climate hazards may be expected. We may consider adding a box to help the reader to understand how the sensitivity and vulnerability of infrastructure is derived on a scientific reliable basis

III. COUNTRY INFORMATION

III.1 analysis of the questionnaires

Several questionnaires are available, with a different level of completeness. It is intended that the analysis follow the order of categories in the questionnaires.

We may consider addressing main findings and conclusions per category or adding an additional summary covering all findings.

III.2 national policies and good practices on adapting transport infrastructure to climate impacts

A first –still incomplete- draft of this chapter is available. It will be completed by summaries of the presentations delivered at the meetings of the Group. We may consider adding an overview of main findings and a conclusion on common elements in national policies.

III.3 case studies on technological impacts in high risk areas

Countries are asked to provide insight in their approach to make the infrastructure climate resilient. Not only regarding the technological challenge, but also regarding the governance aspects, including policy, planning prioritisation etc. If possible, (climate) models, methods and methodologies used may be indicated and examples of risk maps and mapping be provided. Countries may also present case studies with hot spots in their territory, including maps and taking into account different scenarios.

III.4: case studies on socio economic impacts

Countries may prepare case studies illustrating the socio economic impacts of an incident, possibly including a cost benefit analysis of (preventive) actions.

IV. RECOMMENDATIONS AND CONCLUSIONS

IV.1 Generic Guidelines to Governments

- on information needed and how to obtain that
- on cooperation and exchange of data, knowledge etc. between UNECE members

- on how to prepare a hot spots map (conditions, parameters, indicators)
- other

IV.2 Conclusions and recommendations

(IV.3 Agenda for further work)

This agenda should probably not be a part of the report, but be taken up in our note to WP.5 accompanying the report.

C. Time planning

<u>June-October 2018:</u>	intersessional work to identify all information sources and compile the information available. On basis of that, the chapters of the report are drafted. Countries may be asked to send additional information on national policies, case studies, etc. by early October, including their presentations to the Group meetings. Group may be asked to reflect promptly on initial drafts.
<u>Mid November 2018:</u>	First draft for review and comments by the members of the Group.
<u>December 2018:</u>	(meeting #15) Group to discuss the first draft of the report. This, may be not all complete on parts, but should cover all chapters.
<u>Dec2018-May2019:</u>	intersessional work to prepare second and final draft. Group may be asked to reflect on progressive drafts.
<u>June 2019:</u>	(meeting #16) Group to agree on final draft.
