# Minutes of meeting

**Title:** Webinar on Green Infrastructure

**Moderator**: Maja Kurtagić-Hadžić (CENER21) and Selma Totić (Congress Service Center – service provider)
**MoM prepared by:** Sanita Džino and Maja Kurtagić-Hadžić, CENER21

**Date:** December 16, 2021
**Time:** 09:30 – 12:00, on-line via the Zoom app

**Aim of the Webinar**:

- Transfer of knowledge, expertise and experience on EU and world best practices in green infrastructure of expert consultants from Deltares to stakeholders from public and private companies, competent road authorities and responsible national governmental institutions involved in the design and maintenance of road infrastructure

**Participants response**:

The meeting was attended by a total of 71 participants. The list of participants is given in Annex 1 of these minutes.

**Agenda:**

| Session/Theme | Panellist | Time |
|---|---|---|
| **Formal introduction to the Webinar** | | 09:30 – 09:45 |
| ***Welcome and opening remarks*** | Maja Kurtagić-Hadžić, CENER21 | 09:30 – 09:35 |
| ***Introduction to webinar and quiz*** | Maja Kurtagić-Hadžić, CENER21 | 09:35 – 09:45 |
| **Session 1: Incorporating Climate Risks Into Decision Making Process** | | 09:45 – 10:25 |
| ***Thinking about strategies: How to establish a proper action planning for disaster risk reduction and climate change adaptation*** | Mike Woning, Deltares | 09:45 – 10:00 |
| ***Case study: Balancing costs and benefits – Albanian transport infrastructure*** | Mike Woning, Deltares | 10:00 – 10:10 |
| ***Case study: Decision making under deep uncertainty – Philippine transport infrastructure*** | Thomas Bles, Deltares | 10:10 – 10:25 |
| **Session 2: Green Solutions** | | 10:25 – 10:55 |
| ***Nature based solutions for disaster risk reduction*** | Ellis Penning, Deltares | 10:25 – 10:40 |
| ***Sustainable drainage systems for increasing resilience*** | Thomas Bles, Deltares | 10:40 – 10:55 |
| **Discussion** | | 10:55 – 11:25 |
| **Lessons learned and quiz** | Maja Kurtagić-Hadžić, CENER21 | 11:25 – 11:55 |

**Course of the Webinar:**

Ms. Selma Totić, on behalf of the Congress Service Center – service provider, welcomed all participants to the Webinar and introduced them to the basic functions and technical characteristics of the Zoom platform.

Ms. Maja Kurtagić-Hadžić, the ClimaProof Project Manager on behalf of CENER21 and the moderator of the event, opened the webinar and welcomed the participants. She presented general information about the Webinar, its goals and the main topics of discussion. Also, the participants were welcomed by Ms. Sonja Gebert, Associate Programme Manager within the UNEP Office Vienna. Ms. Gebert gave a short overview of the Project, implemented and planned project activities, and challenges faced by the road sector.

Prior to the panellists' presentations, participants were asked to complete a short questionnaire in order to assess the initial level of knowledge of the participants on the subject topic. The results will later enable the assessment of the level of efficiency of the Webinar held in terms of knowledge transfer.

*Session 1: Incorporating Climate Risk Into Decision Making Process* was opened by Mr. Mike Woning, a Transport Infrastructure Geo-Engineer at Deltares, who presented the manner of establishing a proper action plan for disaster risk reduction and climate change adaptation. Mr. Woning said that understanding the problem is key to taking appropriate action, emphasizing that, first of all, it is necessary to take the measures that give us the most time to react with the appropriate cost-effectiveness. Also, Mr. Woning emphasized the importance of adaptive management, which can significantly increase the resilience of infrastructure. By the end of his presentation, Mr. Woning concluded that it is best to apply a combination of appropriate measures, which should be harmonized with future weather conditions, i.e. climate projections.

Mr. Woning continued his presentation by presenting a case study on balancing costs and benefits in Albania. The action plan for Albania consisted of determining the criticality of the relevant road sections, based on historical circumstances and future climate projections. The analysis of possible damage to road infrastructure also included an economic analysis of the damage caused, as well as an estimate of the costs of subsequent remediation.

Ms. Valbona Berisha, ClimaProof National Consultant for Kosovo*, was interested in how long it took to make an Action Plan for Albania. Mr. Woning replied that the development of the Action Plan took four months, emphasizing that, otherwise, this could have been done faster.

Ms. Sonja Gebert briefly commented on Mr. Woning's lecture, stating that this presentation inspired her to consider conducting pilot studies on currently active road infrastructure projects (1-2 projects) in each country of the Western Balkans region for which a principle of national planning similar to the one in Albania could be applied.

The *First Session* was closed by Mr. Thomas Bles, Senior Consultant at Deltares, with a presentation on decision making under deep uncertainty focusing on Philippine transport case study. The adaptive strategy in the Philippines was focused on disasters caused by climate change – floods, landslides, earthquakes. The implementation of the project created a set of maps that showed the hazard, exposure, vulnerability, losses and prioritisation of certain natural disasters. The collected data, as well as the created maps, were used to assess uncertainty in the future, primarily through interruptions or disruptions in road communication. Analyses have shown that the caused damage is greater or more pronounced for major climate changes.

Ms. Ellis Penning, an Expert on Nature Based Solutions at Deltares, opened *Session 2 of the Webinar: Green Solutions* and presented the nature-based solutions for disaster risk reduction. At the beginning of her presentation, Ms. Penning emphasized that Western Balkans is one of the most vulnerable areas in Europe when it comes to climate change. Nature based solutions are actions to protect, sustainably manage and restore natural or modified ecosystems, simultaneously providing human well-being and biodiversity benefits. For the

best results, nature-based solutions should be combined with other risk reduction measures. During her presentation, Ms. Penning focused on nature-based solutions in water management, i.e., the improvement of sponge functioning of the catchment, which can result in reduction of water-related risks, reduction of floods and droughts, restoration of ground water levels, increasement in natural resilience, biodiversity values and ecosystem services. Ms. Penning concluded her presentation with the message that nature-based solutions are part of a larger set of measures and provide multiple benefits for multiple stakeholders.

*Session 2* ended with a presentation held by Mr. Thomas Bles, who presented the benefits of sustainable drainage systems for increasing infrastructure resilience. Mr. Bles emphasized that the main concept of the sustainable drainage system is *"treat and attenuate runoff close to the source"* and these solutions provide better treatment compared to traditional systems during intense rain. These systems need to be integrated with nature, i.e. it is necessary to know the natural characteristics, especially of the surface and groundwater, before their integration. Also, in order to establish such a system, it is necessary to have data on the materials used to build the infrastructure, and the substances used in its daily maintenance (e.g. oils).

At the end of the presentations, Ms. Berisha kindly asked all stakeholders to consider the proposal made by Ms. Gebert to find the specific projects that would need climaproofing assessment on national level.

Ms. Kurtagić-Hadžić invited the participants to complete the same set of questions (questionnaire) again in order to obtain results on the amount of acquired knowledge and usefulness of the Webinar itself. Comparing the results of the two quizzes, the number of correct answers was the same or higher for all questions, except for one, which has been considered as a bit confusing by the experts from Deltares, who composed the quiz questions. Overall, the post-webinar results of the quiz are indicative of improvement in participants' understanding of the concept of green infrastructure. The results achieved from the aspect of knowledge transfer are presented in Table 1.

*Table 1: Achieved results from the aspect of knowledge transfer*

| Question | Correct answer | Percentage of correct answers before the Webinar | Percentage of correct answers after the Webinar |
|---|---|---|---|
| Which statement best describes an adaptation tipping point? | A point at which a policy or action no longer performs acceptably | 23% | 28% |
| Which statement best describes an adaptation pathway? | A dynamic sequence or combination of actions to achieve a specified set of strategic objectives as uncertain conditions change | 28% | 40% |
| Which statement best describes a robust measure or plan? | A measure or plan that performs acceptably across the plausible range of scenario conditions | 72% | 72% |
| Which best describes the main types of measures that should be considered to mitigate disaster risks? | Measures to prevent causes of an event; measures to control consequences of an event | 38% | 32% |
| 'Nature-based Solutions should be more often implemented for infrastructural projects' | No correct answer, but after the Webinar, 64% of participants strongly agree that there are huge opportunities to reduce infrastructure related risks using nature-based solutions. | | |

Ms. Kurtagić-Hadžić and the panellists concluded that the quiz results were at a satisfactory level and that this Webinar most certainly contributed to gaining new knowledge and strengthening the capacity of participants. Upon completion of the presentations, the panellists briefly reviewed the lessons learned at the Webinar.

The Webinar was closed by Ms. Gebert and Ms. Kurtagić-Hadžić who greeted all participants and panellists thanking them for their active participation in the Webinar and inviting them to join the following ClimaProof activities to be held next year.

**Lessons learned:**

- For each part of the infrastructure (e.g. road networks) it is important to determine the criticality, i.e. exposure to natural disasters. It is important to involve all relevant stakeholders in this process.
- Timely adoption and implementation of appropriate measures decreases amount of damage or duration of down time.
- In the process of selecting measures, it is necessary to consider the cost-effectiveness, as well as suitability with local situation, culture and usage.
- Adequate maintenance for culverts is important for performance of the road network.
- Nature based solutions are part of a larger set of measures and provide multiple benefits for multiple stakeholders.
- For infrastructure specifically water retention and soil stabilisation related nature based solutions can reduce risks.
- The sustainable drainage systems approach is more robust and adaptable than the traditional approach of underground piped drainage systems.
- When the capacity of the sustainable drainage systems feature is exceeded, the excess water can be directed to safe storage zones.

* This designation is without prejudice to positions on status and is in line with UNSCR 1244 and the ICJ Advisory Opinion on the Kosovo declaration of Independence.

# Annex 1: Attendee Report

| No. | Name and surname | Institution | Job title | Country | Gender | Contact |
|---|---|---|---|---|---|---|
| **1.** | Samir Hadžić | Transport Administration of Montenegro | Consultant | Montenegro | Male | samir.hadzic@uzs.gov.me |
| **2.** | Zehireta Smajić | ASI Inženjernig d.o.o. | Civil Engineering | Bosnia and Herzegovina | Female | zehireta_smajic@hotmail.com |
| **3.** | Edita Relay | Congress Service Centre | Interpreter | Bosnia and Herzegovina | Female | edita_halep@yahoo.com |
| **4.** | Kristina Sumic Mrkonjic | ASI INZENJERING | Projectant | Bosnia and Herzegovina | Female | kristina.sumic@gmail.com |
| **5.** | Sani Sheholli | Brunotranslate | Interpreter | Kosovo* | Male | sanisheholli@gmail.com |
| **6.** | Edita Pašalić Halep | Congress Service Center | Interpreter | Bosnia and Herzegovina | Female | edita.halep@gmail.com |
| **7.** | Stefan Radulovic | Interpreter | Interpreter | North Macedonia | Male | stefanradulovic92@gmail.com |
| **8.** | Bruno Neziraj | Int | Int | Kosovo* | Male | bruno.neziraj@gmail.com |
| **9.** | Vesna Dimishkovska | Spatial Planning Agency | Spatial Planer | North Macedonia | Female | v.dimiskovska@app.gov.mk |
| **10.** | Dije Rizvanolli | Ministry of Finance | Acting Head of Division for International Financial Cooperation | Kosovo* | Female | dije.rizvanolli@rks-gov.net |
| **11.** | Anel Nurković | Agency for watershed of adriatic sea Mostar | Head of department | Bosnia and Herzegovina | Male | anurkovic@jadran.ba |
| **12.** | Milica Parezanin | Andzor engineering | Architecture and urbanism | Serbia | Female | milica.p@andzor.com |
| **13.** | Remzo Dedić | University of Mostar | Professor | Bosnia and Herzegovina | Male | remzo.dedic@fsre.sum.ba |
| **14.** | Marija Grujić | Railway infrastructure of Montenegro | Technical Director in the Sector for Maintenance of Civil Infrastructure | Montenegro | Female | marija.grujic@zicg.me |
| **15.** | Biljana Milic-Petrovic | Republic Hydrometeorological Service of Serbia | Chief Analyst for Climate Change and Risk Assessment Methodology | Serbia | Female | biljana.milic-petrovic@hidmet.gov.rs |
| **16.** | Adnan Habibovic | IPSA Institute | Head of Hydrotechnical Department | Bosnia and Herzegovina | Male | adnan.habibovic@ipsa-institut.com |

| No. | Name and surname | Institution | Job title | Country | Gender | Contact |
|---|---|---|---|---|---|---|
| **17.** | Maša Radović | Ministry of Ecology, Spatial Planning and Urbanism | Independent Advisor III in the Directorate for Climate Change | Montenegro | Female | masa.radovic@mepg.gov.me |
| **18.** | Ivana Dukic | Serbian Environmental Protection Agency | Head of Group for Air emission inventories | Serbia | Female | ivana.dukic@sepa.gov.rs |
| **19.** | Matevž Premelč | ZaVita, d.o.o. | Project manager | Slovenia | Male | matevz@zavita.si |
| **20.** | Toska Gjikolli | Alb-Architect | Business Developer | Kosovo* | Female | toskagjikolli@albarchitect.com |
| **21.** | Mirjana Ivanov | Institute of Hydrometeorology and Seismology | Head of the Department for Applied Meteorology and Climate Change | Montenegro | Female | mirjana.ivanov@meteo.co.me |
| **22.** | Valmira Bozgo | UNEP | National Project Coordinator | Albania | Female | valmira.bozgo@un.org |
| **23.** | Jasmina Bahtanović | | | | Female | b.jasminka@hotmail.com |
| **24.** | Emil Bakula | Agency for Watershed of Adriatic Sea Mostar | Head of Department | Bosnia and Herzegovina | Male | ebakula@jadran.ba |
| **25.** | Senad Smajlović | JP Ceste FBiH | Head of Department | Bosnia and Herzegovina | Male | ssenad@jpcfbih.ba |
| **26.** | Aleksandra Siljic Tomic | UNEP | Project Coordination Specialist | Serbia | Female | aleksandra.siljictomic@un.org |
| **27.** | Naim Kelmendi | Ministry of Infrastructure | GIS Specialist and Road Planner in Department for Road Management | Kosovo* | Male | naim.kelmendi@rks-gov.net |
| **28.** | Jozhe Jovanovski | PESR | Head of Unit | North Macedonia | Male | j.jovanovski@roads.org.mk |
| **29.** | Milena Ilikj | JPPD | Advisor | North Macedonia | Female | milena.manova@gmail.com |
| **30.** | Gezim Osmani | | | Kosovo* | | gezim.osmani@rks-gov.net |
| **31.** | Metodija Sazdov | UNEP | National coordinator | North Macedonia | Male | metodija.sazdov@un.org |
| **32.** | Letafete Latifi | HMIK/KEPA | Director | Female | Kosovo* | letafete.latifi@rks-gov.net |
| **33.** | Katerina Ivanovska | Farmahem | Program Officer | North Macedonia | Female | katerina.ivanovska@bregalnica-ncp.mk |
| **34.** | Jelena Djurovic | Secretariat of Transport Capital City Podgorica | Advisor | Montenegro | Female | jelena.djurovic@podgorica.me |
| **35.** | Sejla Hodzic | ASI Inženjering d.o.o. Sarajevo | Mr. sc. civil engineering | Bosnia and Herzegovina | Female | sejla-h@hotmail.com |
| **36.** | Andrija Bošnjak | FBiH Environmental protection fund | Associate | Bosnia and Herzegovina | Male | andrija.bosnjak@fzofbih.org.ba |

| No. | Name and surname | Institution | Job title | Country | Gender | Contact |
|---|---|---|---|---|---|---|
| **37.** | Male Lokaj | Department of Road Management | Director | Kosovo* | | male.lokaj@rks-gov.net |
| **38.** | Edin Honić | Asi inzenjering | Director | Bosnia and Herzegovina | Male | h.edin@jpautoceste.ba |
| **39.** | Sara Vujanovic | Ministry of Construction, Transport and Infrastructure | Assistant | Serbia | Female | sara.vujanovic@mgsi.gov.rs |
| **40.** | Vasko Popovski | Consultant | Consultant | North Macedonia | Male | vasko.popovski.vp@gmail.com |
| **41.** | Vasilije Gazivoda | E3 Consulting | expert | Montenegro | Male | vasilije.gazivodalot@gmail.com |
| **42.** | Arben Kelmendi | Consultant | National consultant | Kosovo* | Male | kelmendia@hotmail.com |
| **43.** | Darko Stojanovski | Engineering Company | Civil Engineer | North Macedonia | Male | stojanovskidarko@yahoo.com |
| **44.** | Igor Petkov | Project Structural Engineering | CEO | North Macedonia | Male | igorpmk@gmail.com |
| **45.** | Emir Morina | Ministry of Environment, Spatial Planning and Infrastructure | Traffic and Transport Engineer | Kosovo* | Male | emir.morina@rks-gov.net |
| **46.** | Svjetlana Borojevic | Republic Hydrometeorological Institut | Associate | Bosnia and Herzegovina | Female | s.borojevic@rhmzrs.com |
| **47.** | Bekim Gojani | Ministry of Environment, Spatial Planning and Infrastructure | Head of Division for passanger Transport | Kosovo* | Male | bekim.gojani@rks-gov.net |
| **48.** | Jovana Djukanovic | E3 Consulting | Civil engineer | Montenegro | Female | jovana.djukanovic@e3consulting.co.me |
| **49.** | Marija Tripunovic | European Integration Office | Associate | Montenegro | Female | marija.tripunovic@gsv.gov.me |
| **50.** | Valbona Berisha | Cener21 | National consultant | Kosovo* | Female | valbona.augustiniberisha@gmail.com |
| **51.** | Snezhana Rashkova | Ministry of Transport and Comunication | Deputy Head of Department for urban planning | North Macedonia | Female | snezana.raskova@mtc.gov.mk |
| **52.** | Aleksandar Simić | Ekokons | ClimaProof National Consultant for Serbia | Serbia | Male | aleksandar.simic@ekokons.rs |
| **53.** | Zekire Osmani | | | | | zekire.osmani@rks-gov.net |
| **54.** | Marko Ilić | E3 Consulting | Environmental Specialist | Montenegro | Male | marko.ilic@e3consulting.co.me |
| **55.** | Atdhe Sefa | HMIK | Meteorological Officer | Kosovo* | Male | atdhe.sefa@rks-gov.net |
| **56.** | Julijana Nikova | DEKONS EMA | Environmental expert | North Macedonia | Female | j.nikova@ema.com.mk |

| No. | Name and surname | Institution | Job title | Country | Gender | Contact |
|---|---|---|---|---|---|---|
| **57.** | Kristina Petrovska | Dekons Ema | Engineer for environment and climate change | North Macedonia | Female | k.petrovska@ema.com.mk |
| **58.** | Tina Anic | Enova Sarajevo | Consultant | Bosnia and Herzegovina | Female | tina.anic@enova.ba |
| **59.** | Amir Sinanovic | ASI | Director | Bosnia and Herzegovina | Male | amirsin@hotmail.com |
| **60.** | Lumnie Berisha | Ministry of Environment, Spatial Planning and Infrastructure | Official in the Department of Road Infrastructure | Kosovo* | Female | lberisha575@gmail.com |
| **61.** | Hysejn Dobërqani | Ministry of Environment, Spatial Planning and Infrastructure | Civil Road Infrastructure | Kosovo* | Male | hysejn.doberqani@rks-gov.net |
| **62.** | Andrej Jovanchevski | Congress Service Center | Interpreter | North Macedonia | Male | andrejjovanchevski@gmail.com |
| **63.** | Muhamed Durmic | Freelance | Interpreter | Bosnia and Herzegovina | Male | muhamed.durmic@gmail.com |
| **64.** | Ana Vucerakovic | Congress Service Center | | Montenegro | Female | ana.vucerakovic@congresstravel.me |
| **65.** | Selma Totić | Congress Service Center | Moderator | Bosnia and Herzegovina | Female | selma.redzepagic@kscnet.com |
| **66.** | Thomas Bles | Deltares | Expert Resilient Infrastructure | Netherlands | Male | thomas.bles@deltares.nl |
| **67.** | Ellis Penning | Deltares | Expert on Nature Based Solutions | Netherlands | Female | ellis.penning@deltares.nl |
| **68.** | Mike Woning | Deltares | Project manager and Senior Advisor | Netherlands | Male | mike.woning@deltares.nl |
| **69.** | Sonja Gebert | UNEP | Project Manager | Austria | Female | gebertsonja@gmail.com |
| **70.** | Maja Kurtagić-Hadžić | CENER21 | Project Manager | Bosnia and Herzegovina | Female | maja.kurtagic@cener21.ba |
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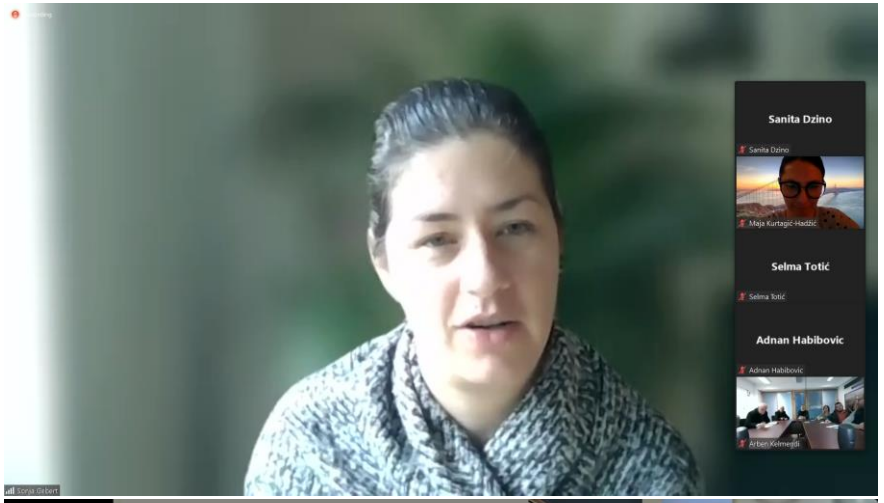
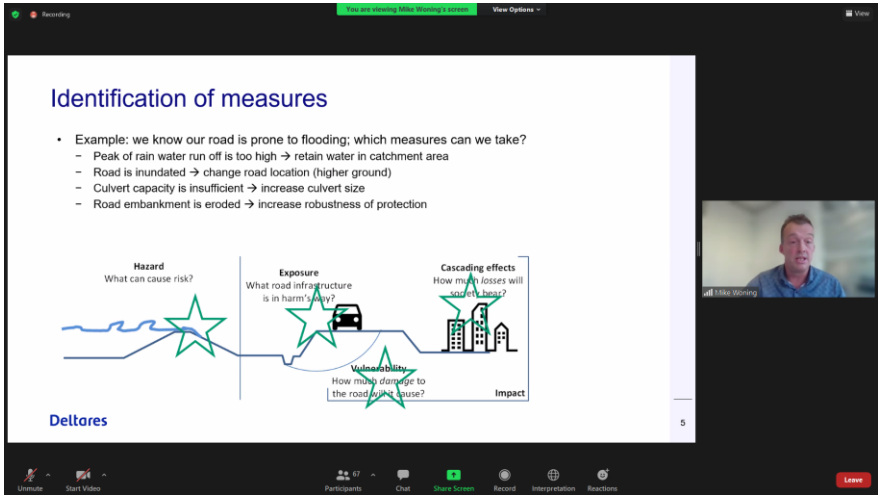
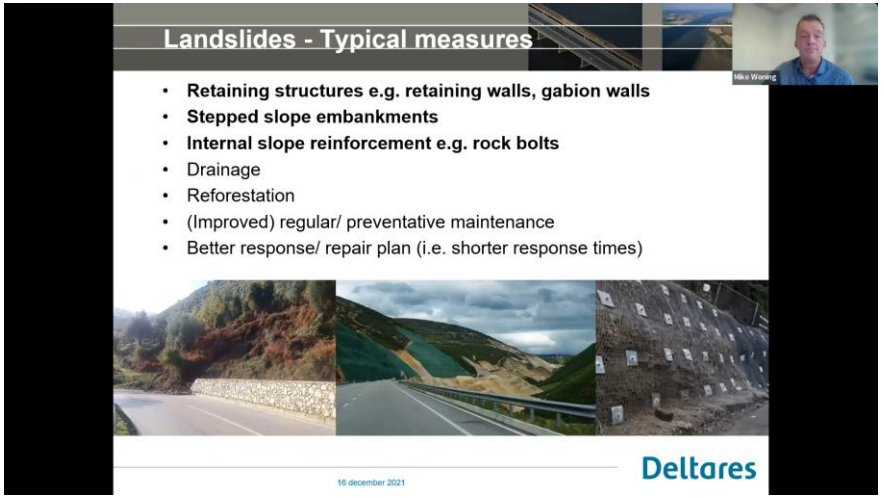
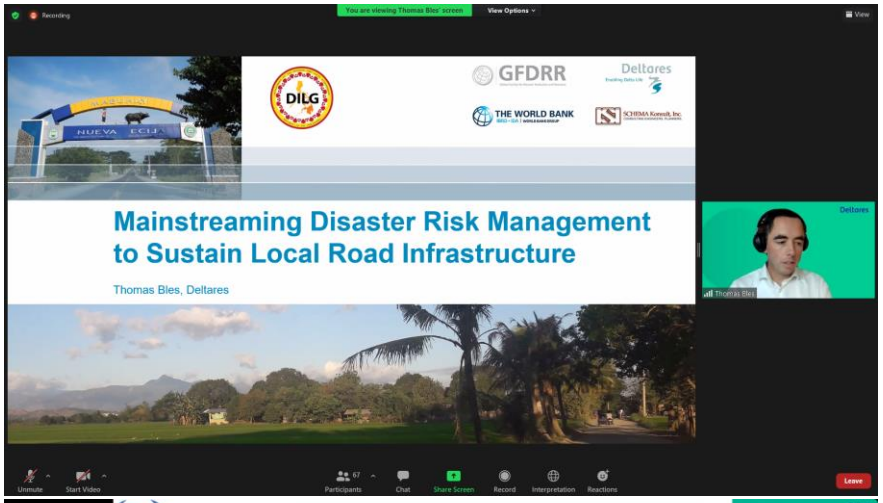
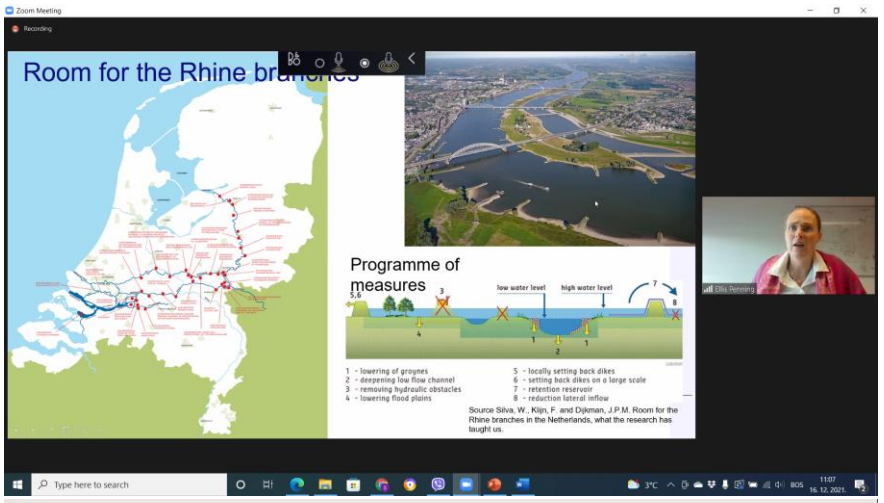
# Annex 2: Photo Material

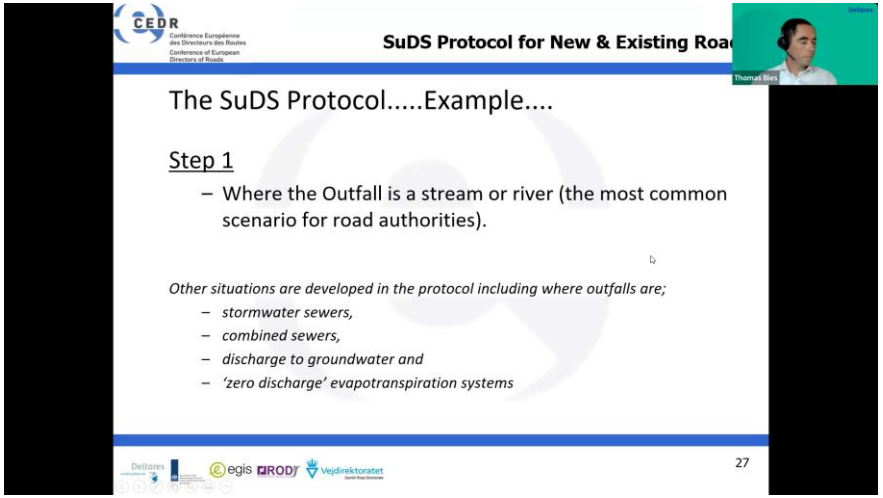



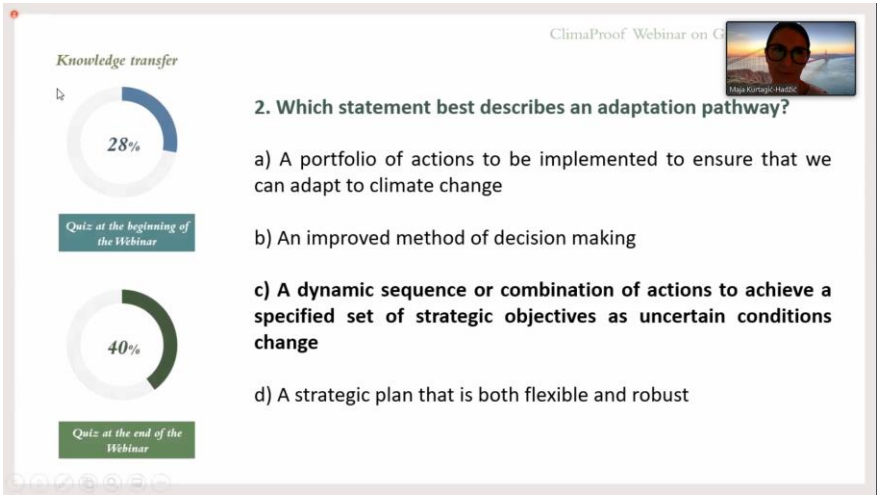




Mainstreaming Disaster Risk Management to Sustain Local Road Infrastructure
Thomas Bles, Deltares
DILG
GFDRR
Deltares
THE WORLD BANK


Room for the Rhine branches
Programme of measures
1 - lowering of groynes
2 - deepening low flow channel
3 - removing hydraulic obstacles
4 - lowering flood plains
5 - locally setting back dikes
6 - setting back dikes on a large scale
7 - retention reservoir
8 - reduction lateral inflow
Source Silva, W., Klijn, F. and Dijkman, J.P.M. Room for the Rhine branches in the Netherlands, what the research has taught us.


CEDR
Conférence Européenne des Directeurs des Routes
Conference of European Directors of Roads
SuDS Protocol for New & Existing Roa
The SuDS Protocol.....Example....
Step 1
– Where the Outfall is a stream or river (the most common scenario for road authorities).
Other situations are developed in the protocol including where outfalls are;
– stormwater sewers,
– combined sewers,
– discharge to groundwater and
– 'zero discharge' evapotranspiration systems
27


Knowledge transfer
28%
Quiz at the beginning of the Webinar
40%
Quiz at the end of the Webinar
2. Which statement best describes an adaptation pathway?
a) A portfolio of actions to be implemented to ensure that we can adapt to climate change
b) An improved method of decision making
c) A dynamic sequence or combination of actions to achieve a specified set of strategic objectives as uncertain conditions change
d) A strategic plan that is both flexible and robust