



## Existing Guidelines for a holistic approach to sustainable Climate Adaptation and Resilience of road networks in Africa

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# Presentation Outline

- Updated status
- Objectives for developing CCA Guidelines
- Brief overview of the existing Guidelines
- Introduction to PIARC CCA Framework
- Points to Ponder for ACTION

# The Pros

- Appreciation of the vast impacts that adverse climate events can / will cause
- Awareness of how climate change will affect national and local road networks, and transport sector
- Existence of regional guidance on the development of climate-resilient road infrastructure
- Recognition that CCA needs to be embedded and mainstreamed, not just into the road engineering practices but also into national policies, information systems, thinking and local capacities



## The Cons

- Lack of awareness of existing guidance/Guidelines on how to deal with these emerging adverse climate effects & challenges
- Extreme climate events are largely dealt with in an unstructured, unsystematic and ineffective manner – limited embedment in policy and RAMS.
- Limited/disjointed continental or regional initiatives to:
  - a) create awareness among member countries of the State of Knowledge in Climate Change Adaptation good practice and,
  - b) lead efforts to consistently share existing and new knowledge, run regular capacity building workshops to ensure no member state, big or small, is left behind



# Overall objectives of developing CCA Guidelines

- to ensure systematic and harmonised approach to implementation of climate change adaptation measures that provide greater resilience of road infrastructure
- to provide structure that facilitates regular and sustainable budget provision, M&E of effectiveness of measures for further refinement and improvement
- to develop capacities of people and institutions to be better prepared for extreme events (drought, flood, extreme temperatures, storms), and follow clear processes and procedures for prioritisation of interventions as recommended in the Guidelines
- to facilitate mainstreaming of climate change adaptation into government's planning policies, plans, processes and systems
- to engender common understanding & learning nationally in order to stimulate cross-sectoral coordination of CCA work and communicate a clearer message to all stakeholders and end-users.

# Climate Adaptation Handbook and associated Guidelines





# Climate Adaptation Handbook

- ✓ only illustrates the fundamental principles, processes and steps required for climate resilience.
- ✓ provides a methodology for carrying out a climate adaptation assessment for rural access to assist socio-economic development
- ✓ focuses on those activities and actions that conventional engineering standards and procedures do not necessarily cover
- ✓ Details regarding actual adaptation measures and vulnerability assessment methodologies - in the accompanying guidelines

Handbook and associated Guidelines are available in

English and French

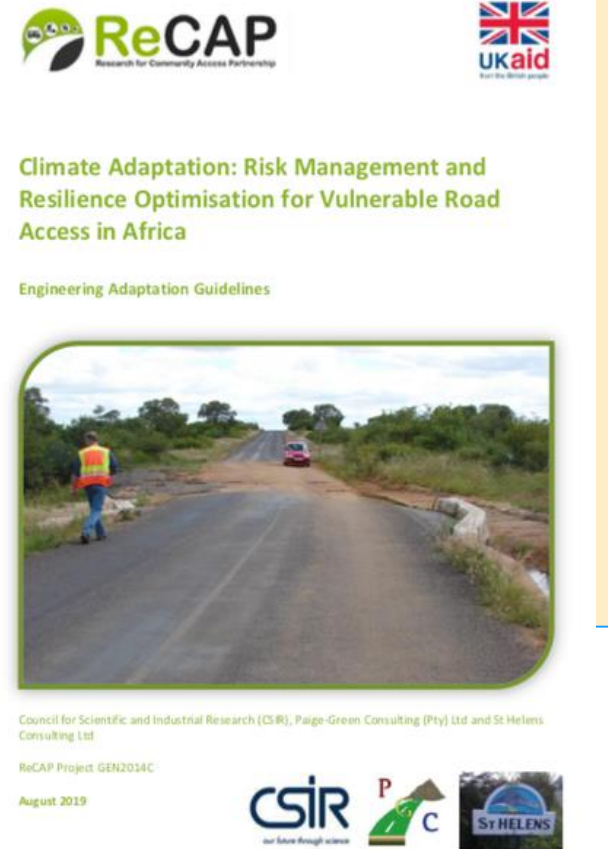
on

[www.research4cap.org/regional projects](http://www.research4cap.org/regional/projects)

IRF website/gTKP/ReCAP

# Brief description of Associated Guidelines

- **Change Management Guideline**
  - ✓ policy and planning
  - ✓ Stakeholder engagement and asset management
  - ✓ recommendations for the formulation of strategies and programmes for improvement.
- **Climate Risk and Vulnerability Assessment Guideline**
  - ✓ takes users through the steps involved in conducting a risk and vulnerability assessment at national/district-level as well as local project-level risk and vulnerability study when implementing new or maintaining/retrofitting existing infrastructure





# Brief description of Associated Guidelines

## Engineering Adaptation Guideline

- ✓ introduces primary climatic attributes and the potential effects of these, followed by the provision of suggested adaptation measures for each infrastructure component
- ✓ also highlights the critical importance of effective drainage provision and of timely and appropriate maintenance of road assets.

## Visual Assessment Manual

- ✓ further supports the Climate Risk and Vulnerability Assessment and Engineering Adaptation Guidelines.
- ✓ Describes nature and collection of data for inputs into climate resilience assessments and implementation of appropriate adaptation techniques



Climate Adaptation: Risk Management and Resilience Optimisation for Vulnerable Road Access in Africa

Engineering Adaptation Guidelines



Council for Scientific and Industrial Research (CSIR), Paige-Green Consulting (Pty) Ltd and St Helens Consulting Ltd

ReCAP Project GEN2014C

August 2019

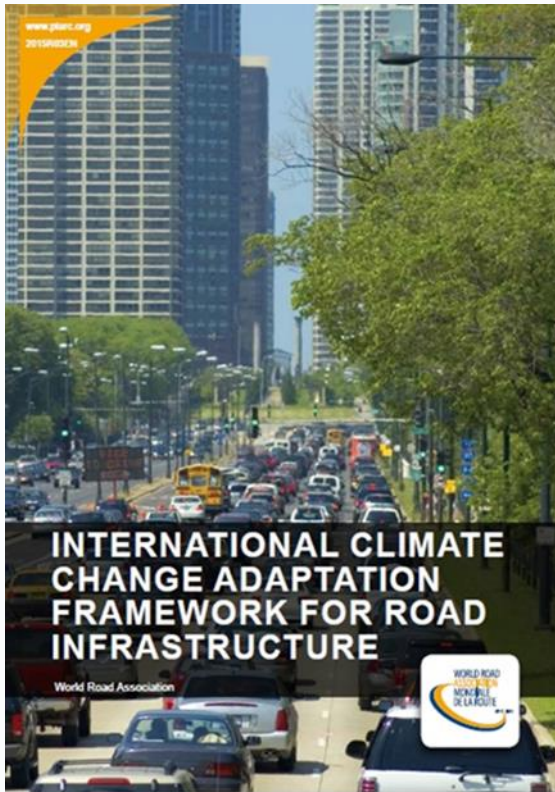


# ReCAP CC Adaptation Methodology

<b>PART A</b>	<b>Situational review and process management</b>	<b>Associated guideline</b>
	Problem identification (including evidence) Identification of probable causes Drivers of change (policy-driven) Change management Approach and delivery Effective data management	<b>Change Management</b>
<b>PART B</b>	<b>Methodology</b>	<b>Associated guideline</b>
<b>Stage 1</b>	<b><i>Climate risk screening (national/regional)</i></b>	
B.1.1	Needs determination	<b>Change Management</b>
B.1.2	Identification and mobilisation of stakeholder/partner involvement	
B.1.3	Setting of policy, objectives and scope (network level)	
B.1.4	Analysis of observed and projected climate effects	<b>Risk &amp; Vulnerability</b>
B.1.5	Data gathering and risk analysis	
<b>Stage 2</b>	<b><i>Impact and vulnerability assessment (project/local level)</i></b>	
B.2.1	Project-level climate risk screening	<b>Risk &amp; Vulnerability</b>
B.2.2	Climate-sensitive impact assessments	
B.2.3	Data gathering and vulnerability assessment	
<b>Stage 3</b>	<b><i>Technical and economical evaluation of options</i></b>	
B.3.1	Identification of strategies and potential adaptation measures	<b>Engineering</b>
B.3.2	Impact assessment of 'do something' and 'do nothing'	
B.3.3	Stakeholder consultations	
B.3.4	Prioritisation and selection of adaptation measures	
<b>Stage 4</b>	<b><i>Project design and implementation</i></b>	
B.4.1	Development of an implementation plan (including 'Low-cost' scenario)	<b>Engineering</b>
B.4.2	Design parameters and optimisation	
B.4.3	Construction supervision and documentation	
<b>Stage 5</b>	<b><i>Monitoring and Evaluation</i></b>	
B.5.1	Development of a monitoring and evaluation plan	<b>Engineering</b>
B.5.2	Reporting and sharing of implementation experiences	

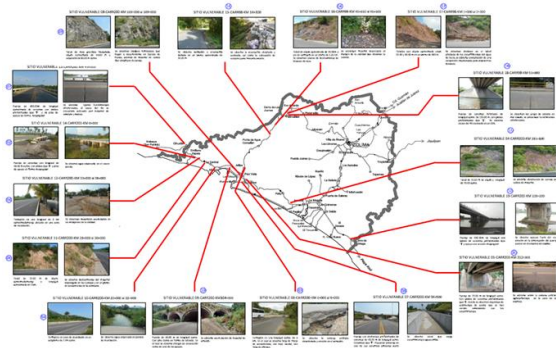
# THE PIARC CC ADAPTATION FRAMEWORK

WRC SEOUL 2015



- Developed to guide road authorities through identification and assessment of risk, to the development of adaptation responses.
- Applicable under any geographical, climatic, economic, and environmental condition, irrespective of data availability, locality, etc.

# Basis of the changes to be introduced



Examples of systematic implementation of the FW



Collated case studies

Reports from the previous cycle, exploring possibilities for refinement, ReCAP methodologies for LMIC

**150 xgeo.no – Expert tool for preparedness, monitoring and forecasting**

- Weather data
- Road data
- Data on earlier events
- Threshold values
- Emergency levels → responsibility and action

Recognizing situations requiring a higher emergency level.

Topics to include?  
Making use of available data, data-sharing, combining weather, terrain conditions and previous weather-related events.

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**34 Geospatial analysis of climate change in road infrastructure in Mexico: impacts, vulnerability, future climate and risks**

- Identifying risk sites on the network by the help of GIS - methodology and the examples.
- The case study is supported by maps of risk and climate change made in Mexico, and that when maps overlay with the road network, the sections of the road network exposed to different climatic threats can be identified.
- A very useful document

Good basis for prioritizing adaptation action when road networks are very large

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**158 Wellington Regional Land Transport Resilience Programme Business Case**

The Wellington Region is vulnerable to a range of natural hazards, including earthquakes, tsunamis, major storms, floods and landslides.

Waka Kotahi, in collaboration with local councils and KiwiRail, identified the most-at-risk locations in the land transport system, and recommended a programme of interventions to address the risks at these locations.

The CS could be used as a text box, and inform sections 1.7, 2.3, 3.2 or 5.1.

An example of ICA and Cost-Benefit Analysis approaches and was used as input to a wider integrated multi-sector plan. However, its primary focus and maximum credible event used for planning was not climate change related.

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1  
2

## New elements introduced in the Framework (examples)

- **Developing a better baseline for adaptation**
- Education, awareness, training, effective communication
  - Stakeholder communication and involvement, inter-sectoral coordination from the outset
  - Educating your own staff, arranging courses for contractors and consultants
  - Educating new professionals on national scale
- Incorporate methodologies appropriate for LMIC and LIC from ReCAP Guidelines
- Adjustments to contracts: e.g. preventive maintenance, better use of forecasts, managed retreat
- Inter-sectoral collaboration agreements e.g. with meteorology, environment & water resources, agriculture, Disaster Management, among others
- Developing a business case for adaptation

# Improving preparedness and capacity to manage events

Monitoring

Proactive maintenance – based on forecasts

Emergency planning

Resources for effective recovery

Stakeholder involvement and structured inter-sectoral coordination





# Synergies between PIARC FW and ReCAP Guidelines

- ReCAP Guidelines were developed almost in parallel with the PIARC Framework but with no coordination between the two
- ReCAP Guidelines focused primarily on conditions pertaining to Sub-Saharan Africa.
- PIARC FW had a disproportionate slant towards more developed countries
- The current process of updating the PIARC Framework involves incorporation of particular methodologies from the ReCAP Guidelines to ensure users in LMIC and LIC also find it relevant and useful.
- Overall guidance provided in the FW, with specific and appropriate applications/methodologies for SSA in the ReCAP Guidelines

# Key Points to Ponder.....for Actioning

- Mainstreaming climate change adaptation into government's planning policies, plans, processes and systems
- Requires buy-in, uptake and extensive capacity development at both institutional and individual level
- Climate change adaptation is a long-term country commitment and involves multiple role-players and stakeholders across various domains.
- Embedment of CCA into RAMS ensures continuity and consistency in testing, trialling, evaluating and monitoring of the performance of these new approaches and sharing of the lessons learned
- Development of National Standards for Climate Resilient Infrastructure

## Recommendation

AU+AUDA-NEPAD + RECs + AfDB, WB and others, in coordination with member states and in collaboration with multinational development partners, to take the lead in harmonisation of these initiatives.

**TIME FOR ACTION IS NOW!**



## SDG TARGET 9.1

### Goals:

- Goal 1 – NO POVERTY
- Goal 2 – ZERO HUNGER
- Goal 3 – GOOD HEALTH AND WELL - BEING
- Goal 4 – QUALITY EDUCATION
- Goal 8 – DECENT WORK AND ECONOMIC GROWTH

**DEVELOP  
SUSTAINABLE,  
RESILIENT &  
INCLUSIVE  
INFRASTRUCTURE**

# Thank you for your attention!



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