Climate resilience  
How can it be demonstrated?

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For more information: www.hydropower.org/congress
New IDA requirements and methods developed by WBG for improving climate change resilience for large water infrastructure

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IDA17 Requirements

All IDA Country Partnership Frameworks shall incorporate climate and disaster risk considerations into the analysis of the country’s development challenges and priorities.

Screen all new IDA operations for short- and long term climate change and disaster risks and, where risks exist, integrate appropriate resilience measures.
Regional Hydropower (+Pumped Storage)

Traditional v. DMU Analysis

Traditional Planning, or “Predict Then Act”

- What will the future be?
- What is the best near-term decision?
- How sensitive is our decision to our predictions?

Decision Making Under Uncertainty (DMU)

- Proposed strategy
- Identify vulnerabilities of this strategy
- Develop strategy adaptations to reduce vulnerabilities

What will the future be?
What is the best near-term decision?
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Proposed strategy
Identify vulnerabilities of this strategy
Develop strategy adaptations to reduce vulnerabilities
Climate projections can be overlaid vulnerability surfaces to understand order of magnitude of effects.
NPV response to climate and socio-economic uncertainties
IDENTIFYING AND MANAGING CLIMATE RISKS

THE CLIMATE CHANGE DECISION TREE
- A scientifically defensible, flexible, cost-efficient tool on climate risks
- A bottom-up approach taking into account local realities and climate sensitivity

PHASE 1 PROJECT SCREENING
Is the proposed project climate sensitive?

PHASE 2 DESKTOP ANALYSIS
Is climate a dominant factor?

PHASE 3 CLIMATE STRESS TEST
What is the plausible climate risk?

PHASE 4 CLIMATE RISK MANAGEMENT
Can the project cope with potential climate changes in the system (‘robustness’)?

CLIMATE RISK MANAGEMENT PLAN & CLIMATE RISK REPORT
Measures needed to ensure the project’s robustness are documented

If project robustness is not achievable, the project is adjusted and put through phase 3 again, or a redesigned project starts at phase 1.

Exhaustive climate risks analysis: Combining historic data, global climate model projections, a hydrologic-economic water system model, etc.

A rapid project scoping exercise, using a (simplified) water resources system model, compares climate impacts with others such as existing variability, population growth, etc.

Climate sensitivity screening for all Bank projects: Is climate a factor to take into account?

Climate Risk Statement
Climate Risk Report
Climate Screening Worksheet
Climate change gives both risks and opportunities

- $24.8 billion gain
- $1.8 billion gain
- $0.9 billion loss
- $0.8 billion gain
- $0.3 billion gain
- $7. billion loss
- $0.2 billion gain
- $13.2 billion loss
- $3.9 billion gain
- $42.1 billion loss
- $2.4 billion gain

Basin:
- Volta
- Eastern Nile
- Zambezi
- Nile Equatorial Lakes
- Niger
- Senegal

Legend:
- Maximum relative gain due to climate change/best scenario
- Maximum relative reduction due to climate change/best scenario
Regrets can be reduced by changes in design.
Enhancing the climate resilience of Africa's infrastructure: the power and water sectors (English)

ABSTRACT

Africa has experienced economic growth of more than 5 percent per annum during the past decade, but to sustain this growth, investment in infrastructure is fundamental. Much of these investments will support the construction of long-lived infrastructure.

Material available from World Bank website