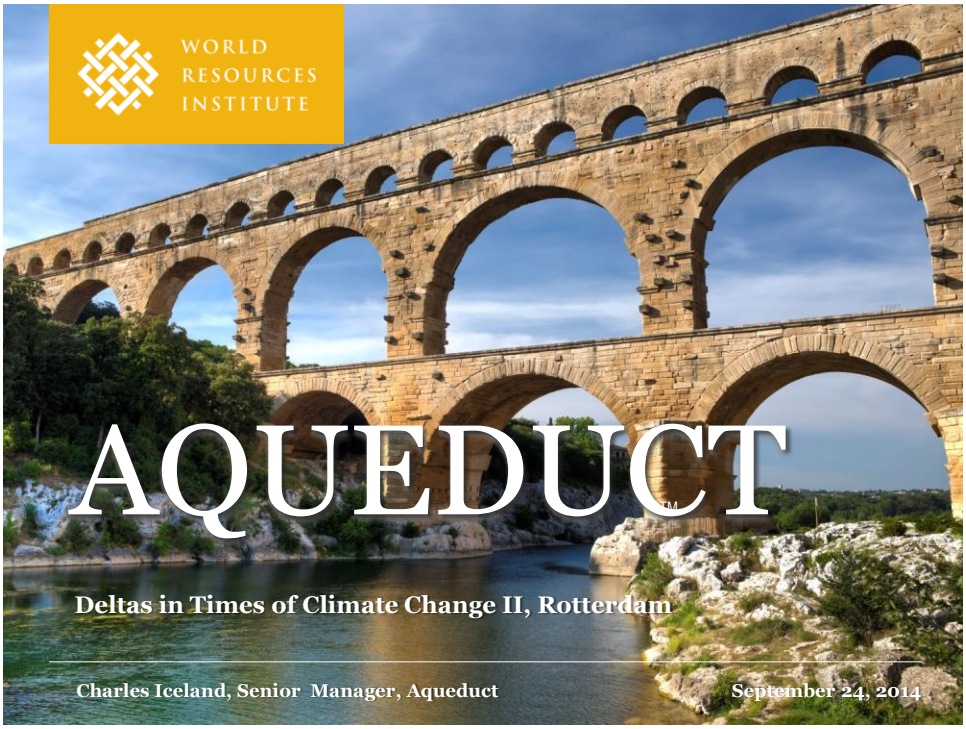
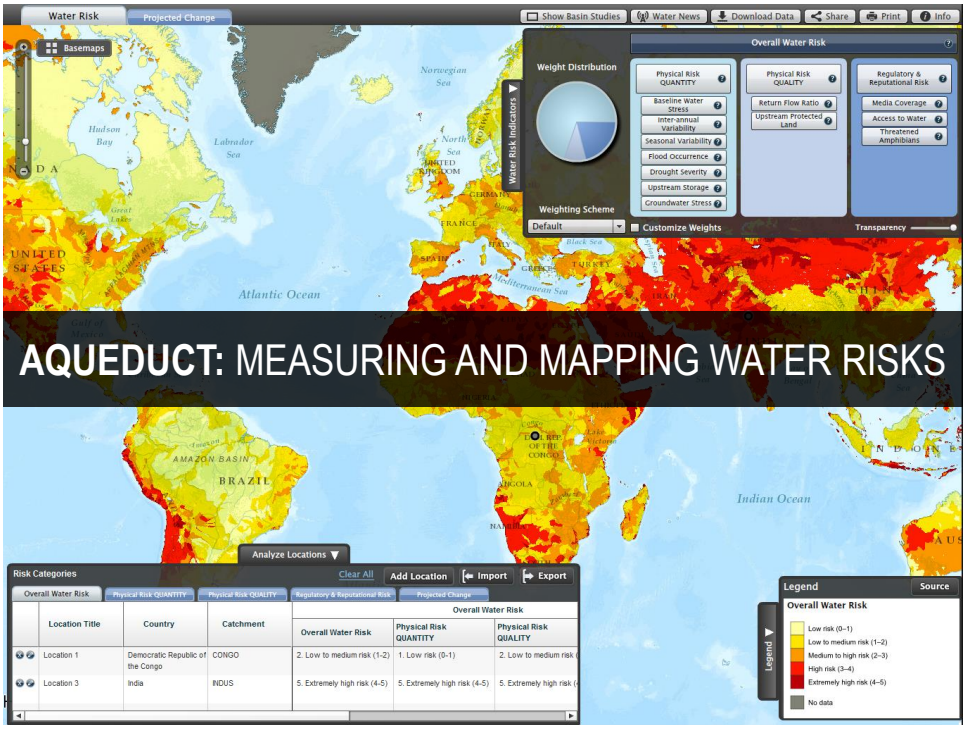

WORLD
RESOURCES
INSTITUTE
AQUEDUCT
Deltas in Times of Climate Change II, Rotterdam
Charles Iceland, Senior Manager, Aqueduct
September 24, 2014

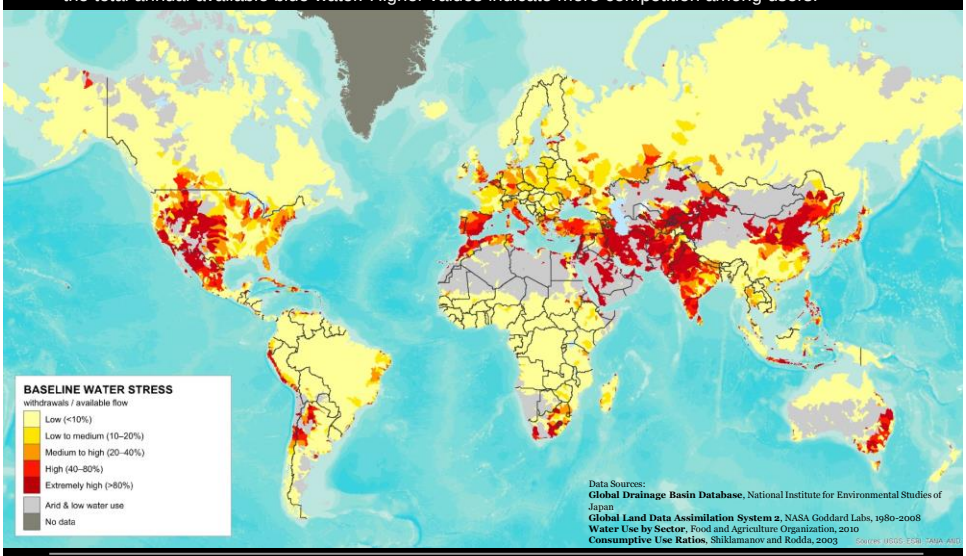

2.9
billion people live in highly to extremely highly water-stressed countries



AQUEDUCT: MEASURING AND MAPPING WATER RISKS

BASELINE WATER STRESS

Total annual water withdrawals (municipal, industrial, and agricultural) expressed as a percentage of the total annual available blue water. Higher values indicate more competition among users.



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MIT
UNIVERSITY OF CAMBRIDGE
UNIVERSITY OF BOTSWANA
National War College
unesp UNIVERSIDADE ESTADUAL PAULISTA "JÚLIO DE MESQUITA FILHO"
CLARK UNIVERSITY 1887

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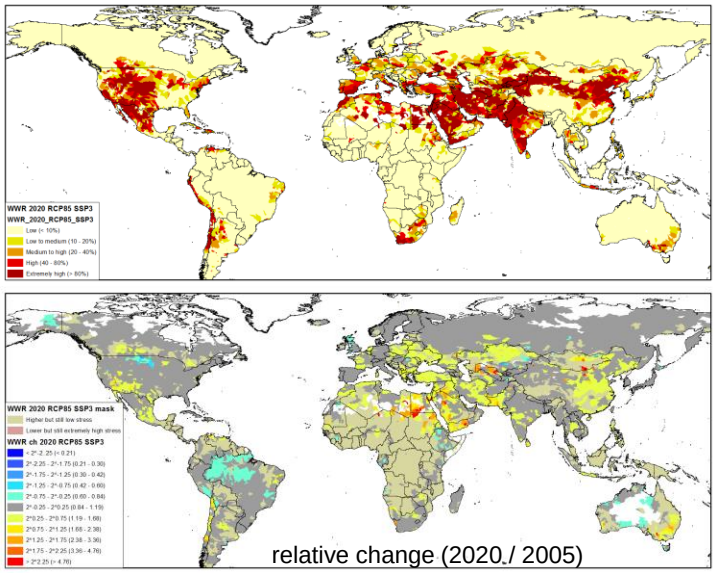
PROJECTED CHANGE IN WATER STRESS

isciences

WATER STRESS (RCP85/SSP3) 2020



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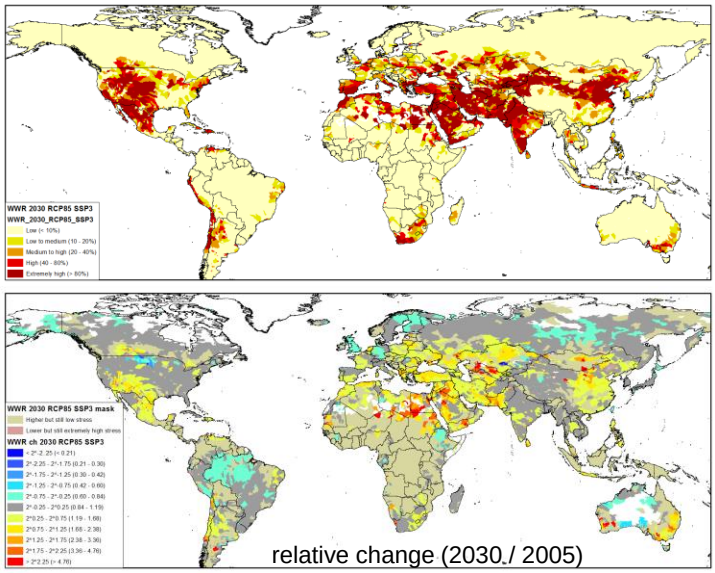
WATER STRESS (RCP85/SSP3) 2030



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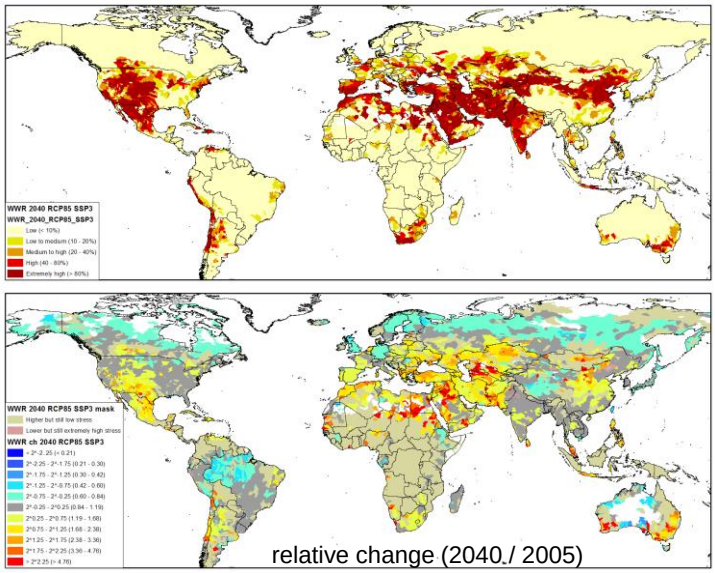
WATER STRESS (RCP85/SSP3) 2040



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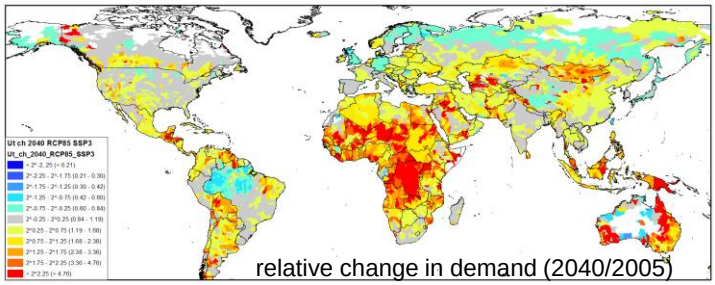
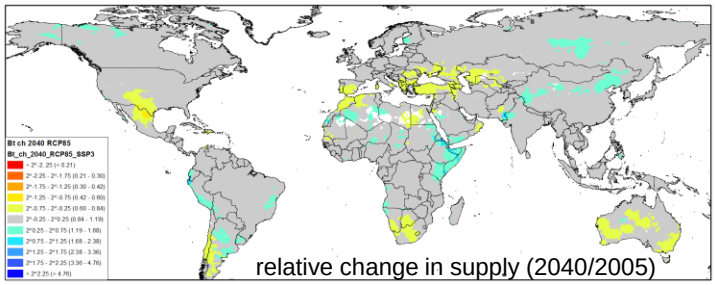
RELATIVE CHANGE IN SUPPLY & DEMAND



relative change in demand (2040/2005)



relative change in supply (2040/2005)

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AQUEDUCT FLOOD RISK ANALYZER

ANNUAL FLOOD TOLL:

5,900 killed per year

100 MILLION+ displaced/affected

23 BILLION USD in economic losses

Source: Munich Re (2013) NatCatService

AQUEDUCT FLOOD ANALYZER PARTNERS

Kingdom of the Netherlands

Universiteit Utrecht

WORLD RESOURCES INSTITUTE

PBL Netherlands Environmental Assessment Agency

Deltares
Enabling Delta Life

IVM
Institute for Environmental Studies

VU

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FLOOD PROJECTIONS

Global indicators of flood risk under current and future climate and socio-economic conditions.

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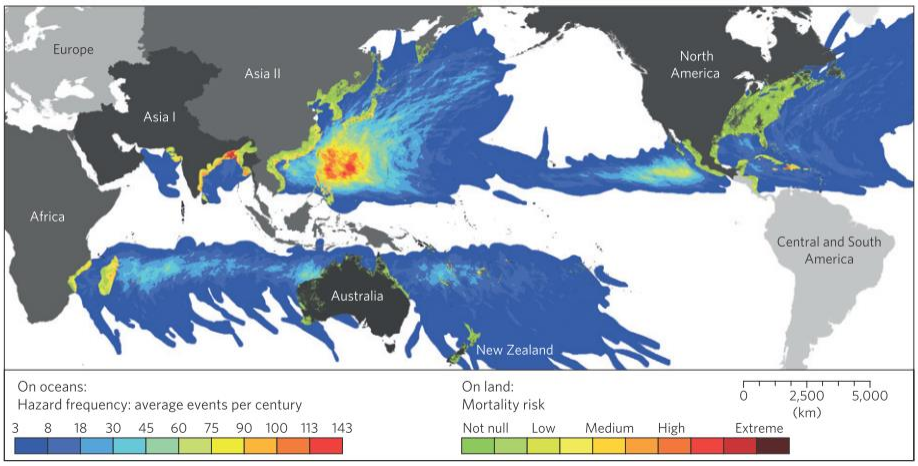
STORM SURGE MODELLING (Proposed collaboration with Declares, VU University Amsterdam, Utrecht University, and PBL)



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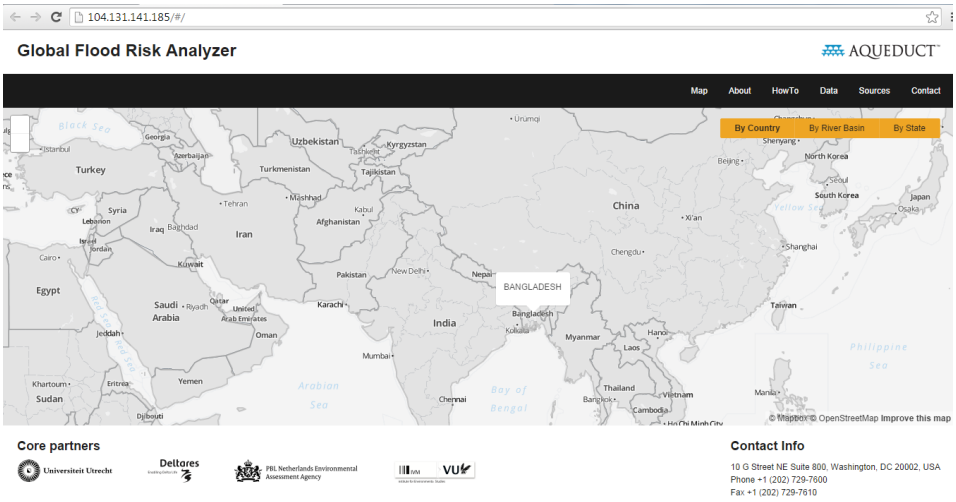
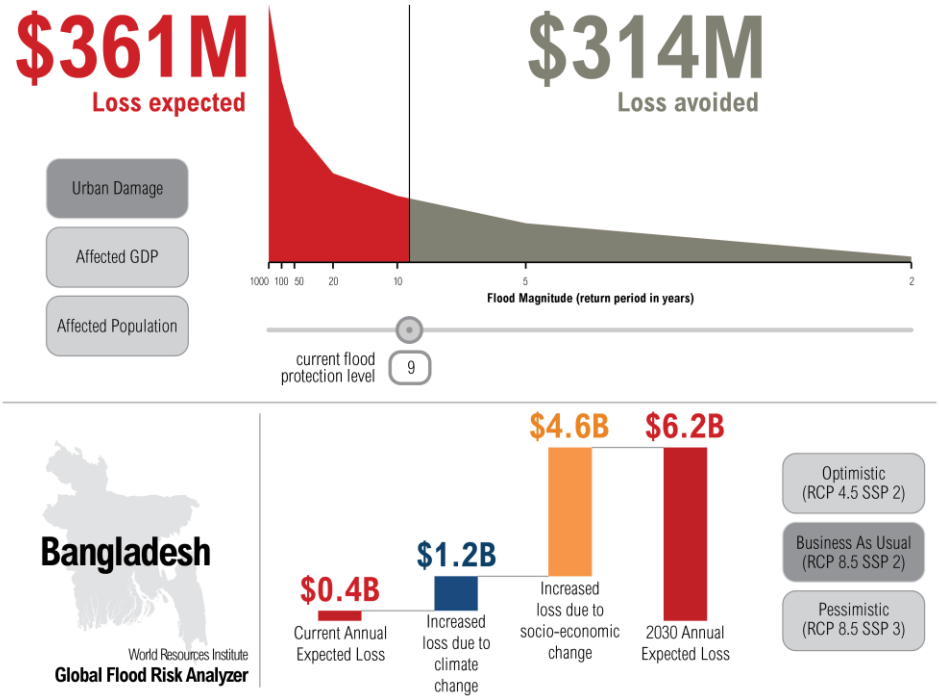
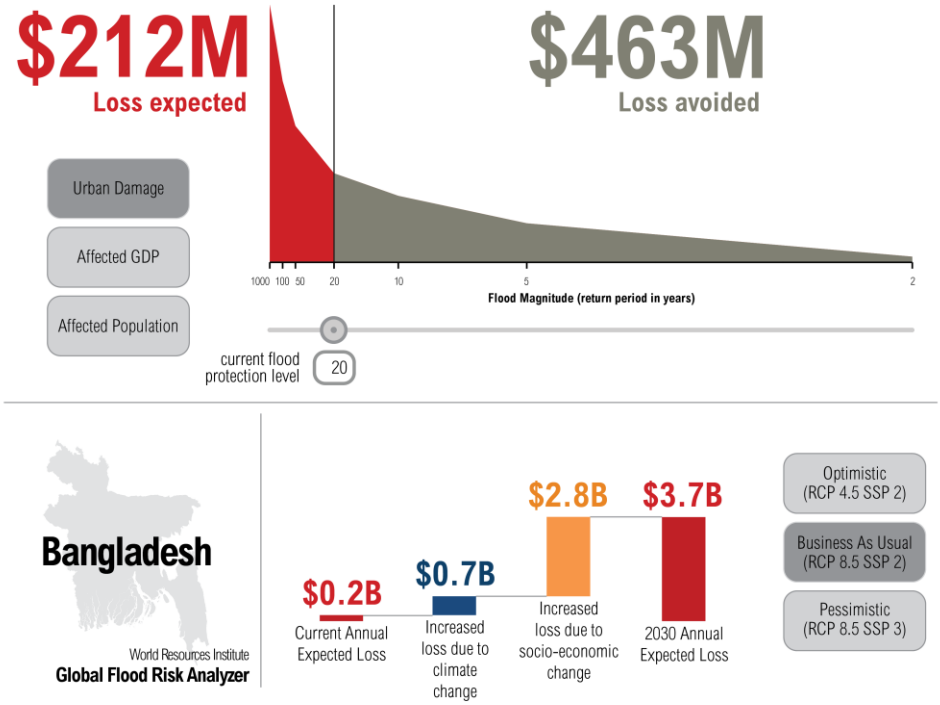
Universiteit Utrecht

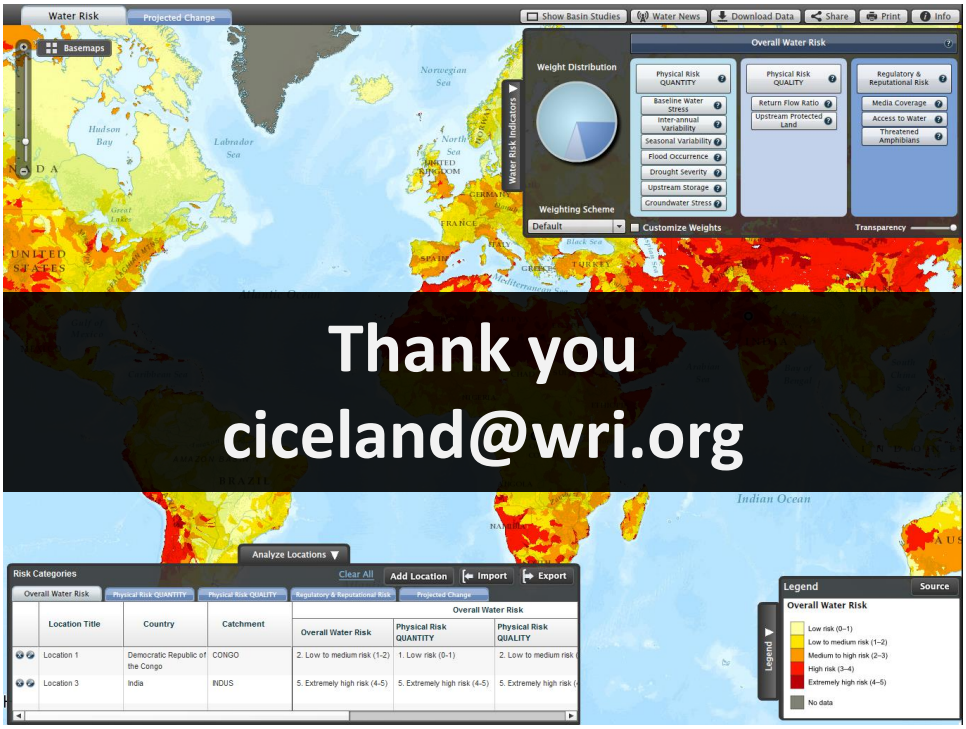
Deltares
Enabling Delta Life

AQUEDUCT FLOOD ANALYZER v1.0 in beta testing






$212M
Loss expected
$463M
Loss avoided
Urban Damage
Affected GDP
Affected Population
1000 100 50 20 10 5 2
Flood Magnitude (return period in years)
current flood protection level
20
Bangladesh
World Resources Institute
Global Flood Risk Analyzer
$0.2B
Current Annual Expected Loss
$0.7B
Increased loss due to climate change
$2.8B
Increased loss due to socio-economic change
$3.7B
2030 Annual Expected Loss
Optimistic (RCP 4.5 SSP 2)
Business As Usual (RCP 8.5 SSP 2)
Pessimistic (RCP 8.5 SSP 3)


Water Risk
Projected Change
Show Basin Studies
Water News
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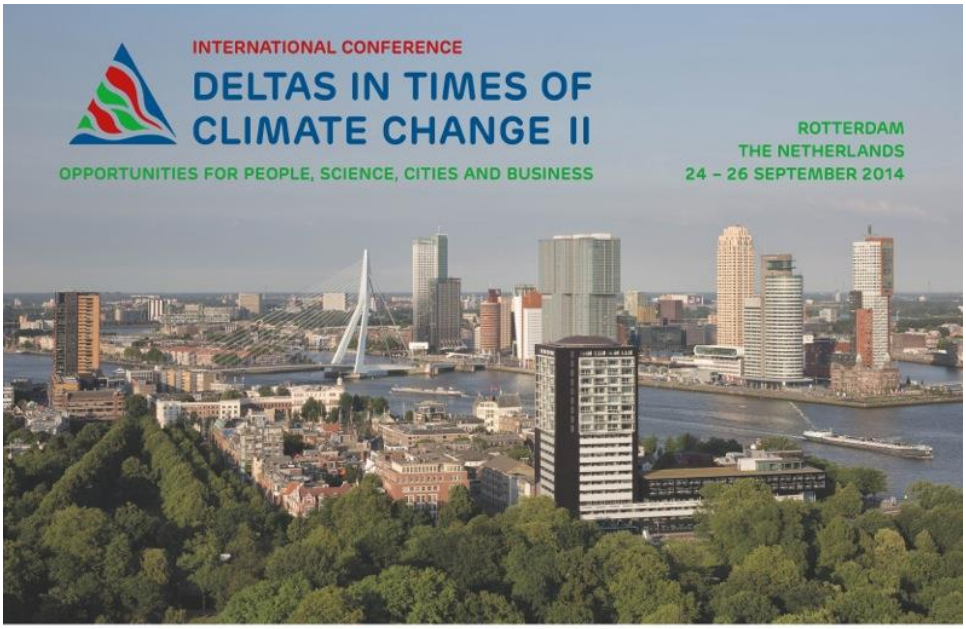
Print
Info
Basemaps
Overall Water Risk
Weight Distribution
Weighting Scheme
Default
Customize Weights
Transparency
Water Risk Indicators
Physical Risk QUANTITY
Baseline Water Stress
Inter-annual Variability
Seasonal Variability
Flood Occurrence
Drought Severity
Upstream Storage
Groundwater Stress
Physical Risk QUALITY
Return Flow Ratio
Upstream Protected Land
Regulatory & Reputational Risk
Media Coverage
Access to Water
Threatened Amphibians
Thank you
ciceland@wri.org
Indian Ocean
Analyze Locations
Risk Categories
Clear All
Add Location
Import
Export
Overall Water Risk
Physical Risk QUANTITY
Physical Risk QUALITY
Regulatory & Reputational Risk
Projected Change
Location Title
Country
Catchment
Location 1
Democratic Republic of the Congo
CONGO
2. Low to medium risk (1-2)
1. Low risk (0-1)
Location 3
India
INDUS
5. Extremely high risk (4-5)
Legend
Source
Low risk (0–1)
Low to medium risk (1–2)
Medium to high risk (2–3)
High risk (3–4)
Extremely high risk (4–5)
No data



ROTTERDAM CLIMATE INITIATIVE Climate Proof

Knowledge for Climate

Ministry of Infrastructure and the Environment
Ministry of Foreign Affairs

C40CITIES
CLIMATE LEADERSHIP GROUP