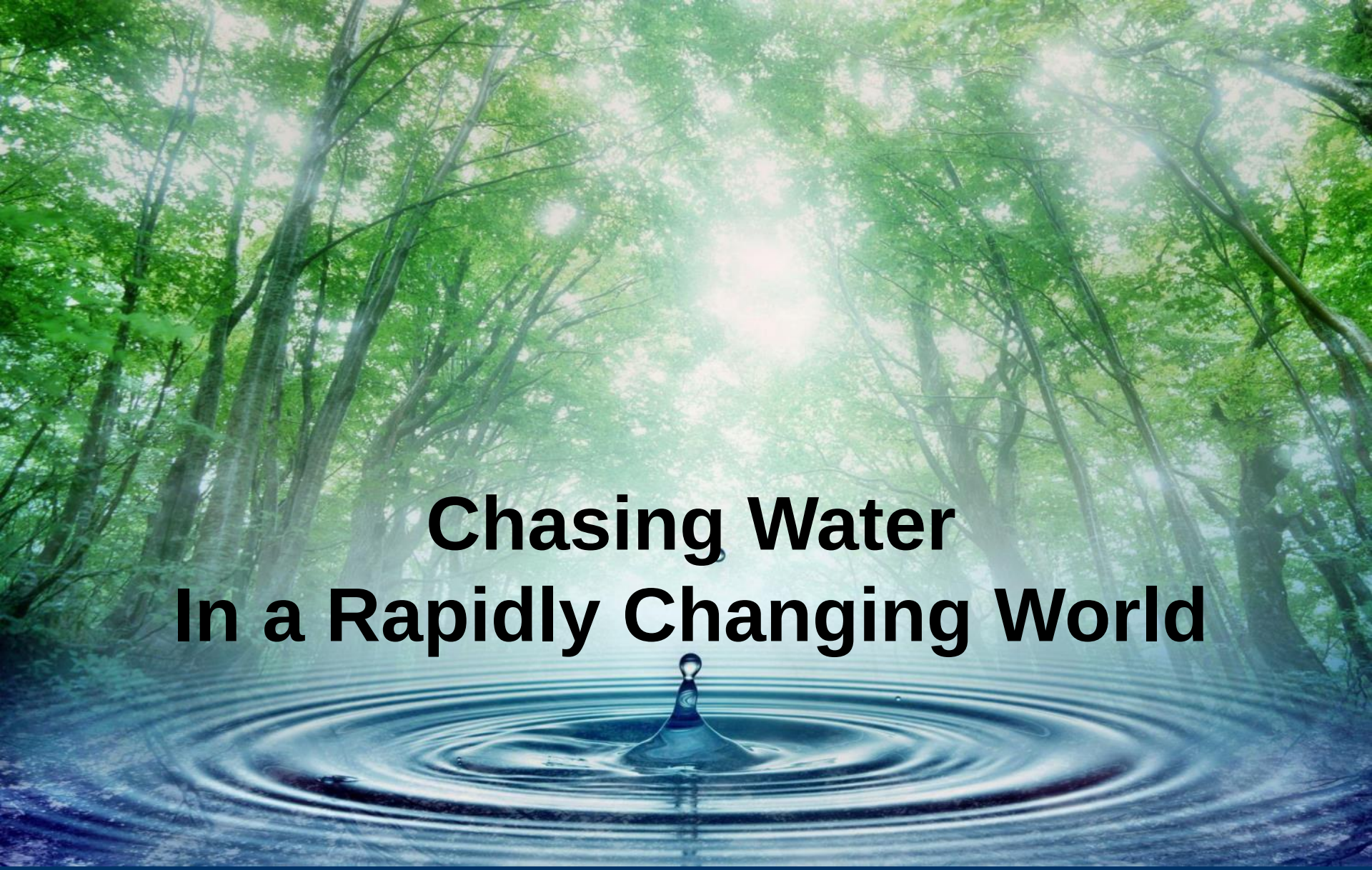


Chasing Water In a Rapidly Changing World

Brian Richter

Chief Scientist, Global Water Program, The Nature Conservancy

President, Sustainable Waters

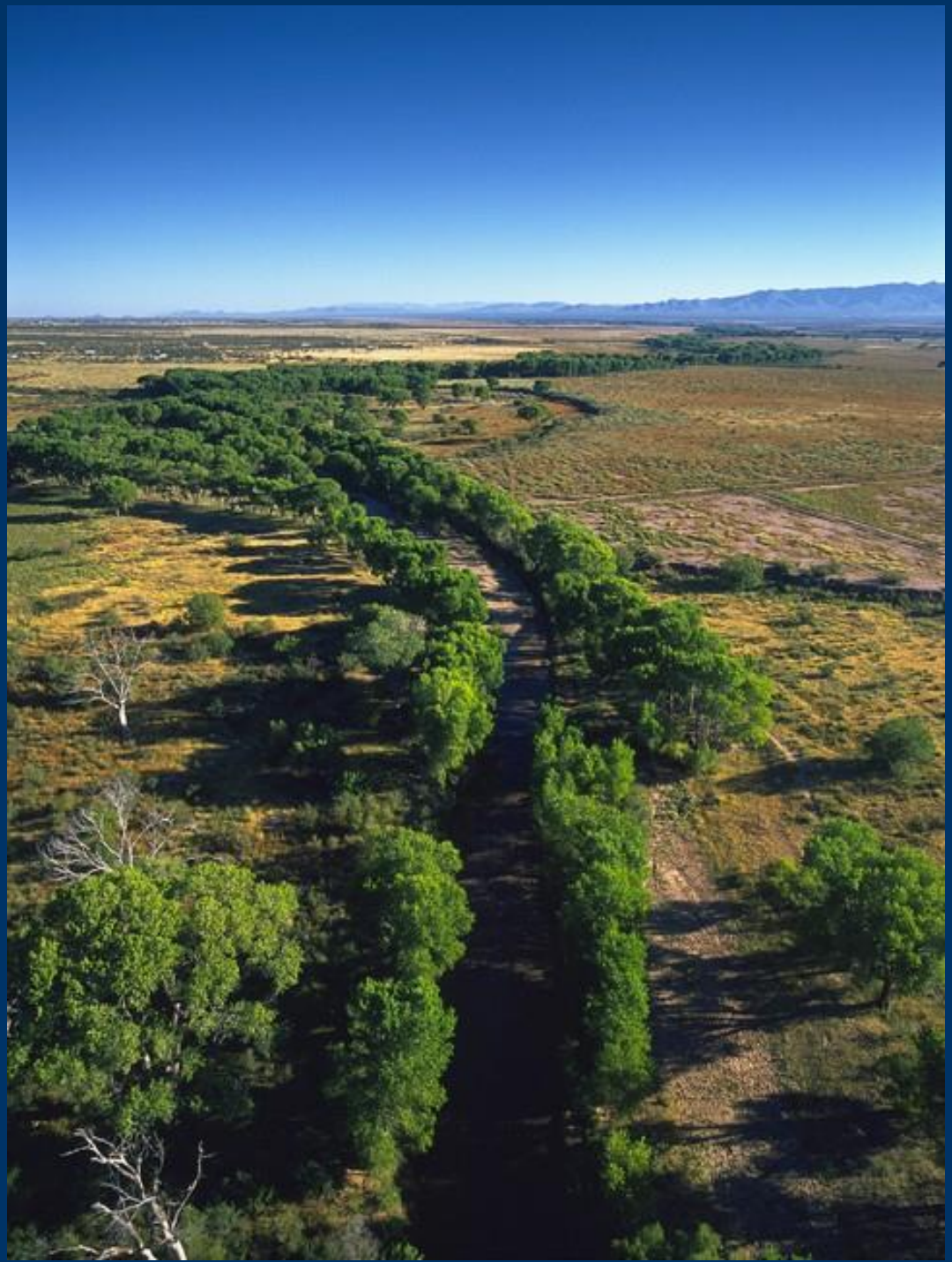
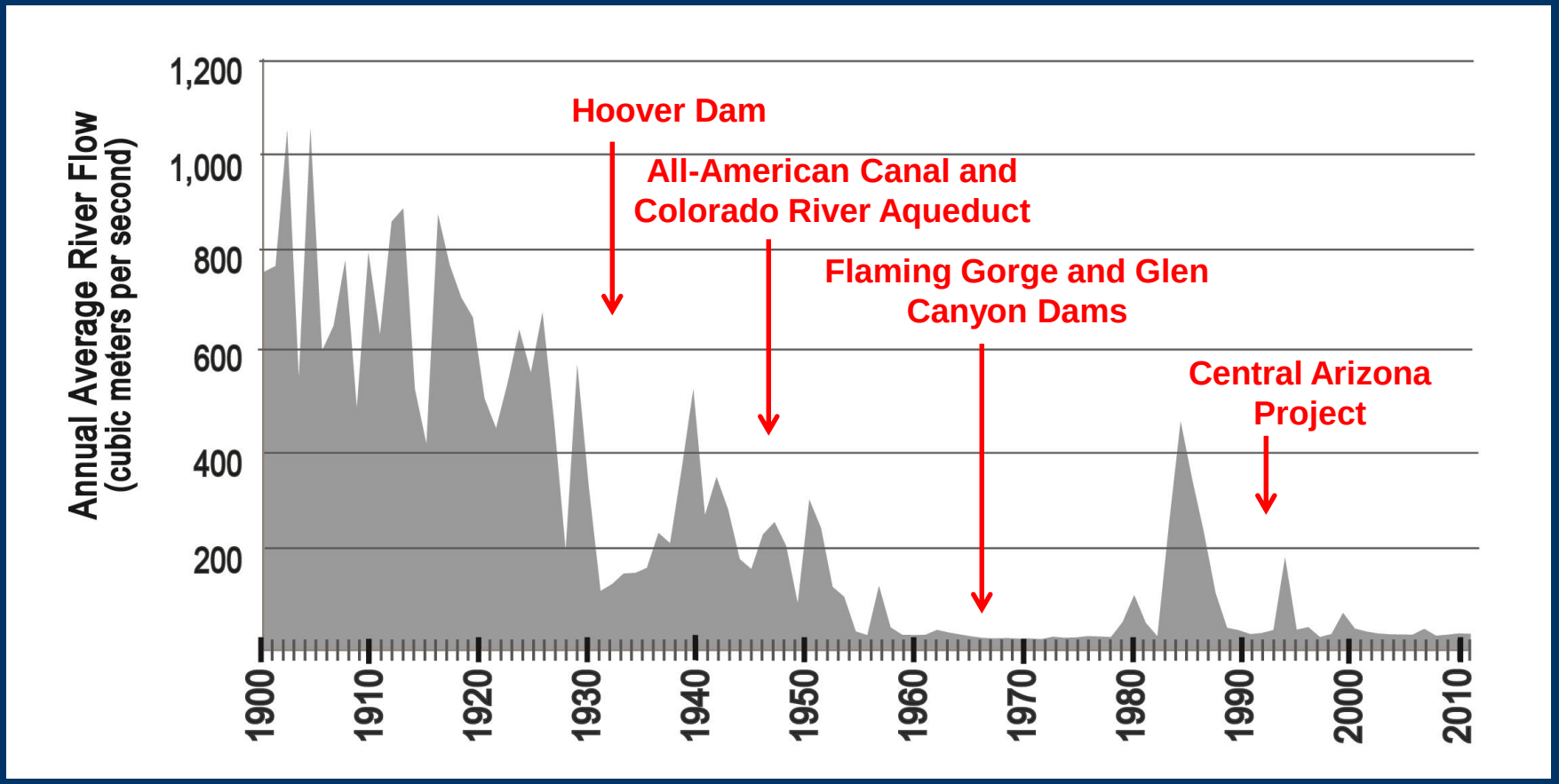


Photo by Adriel Heisey

Colorado River, USA



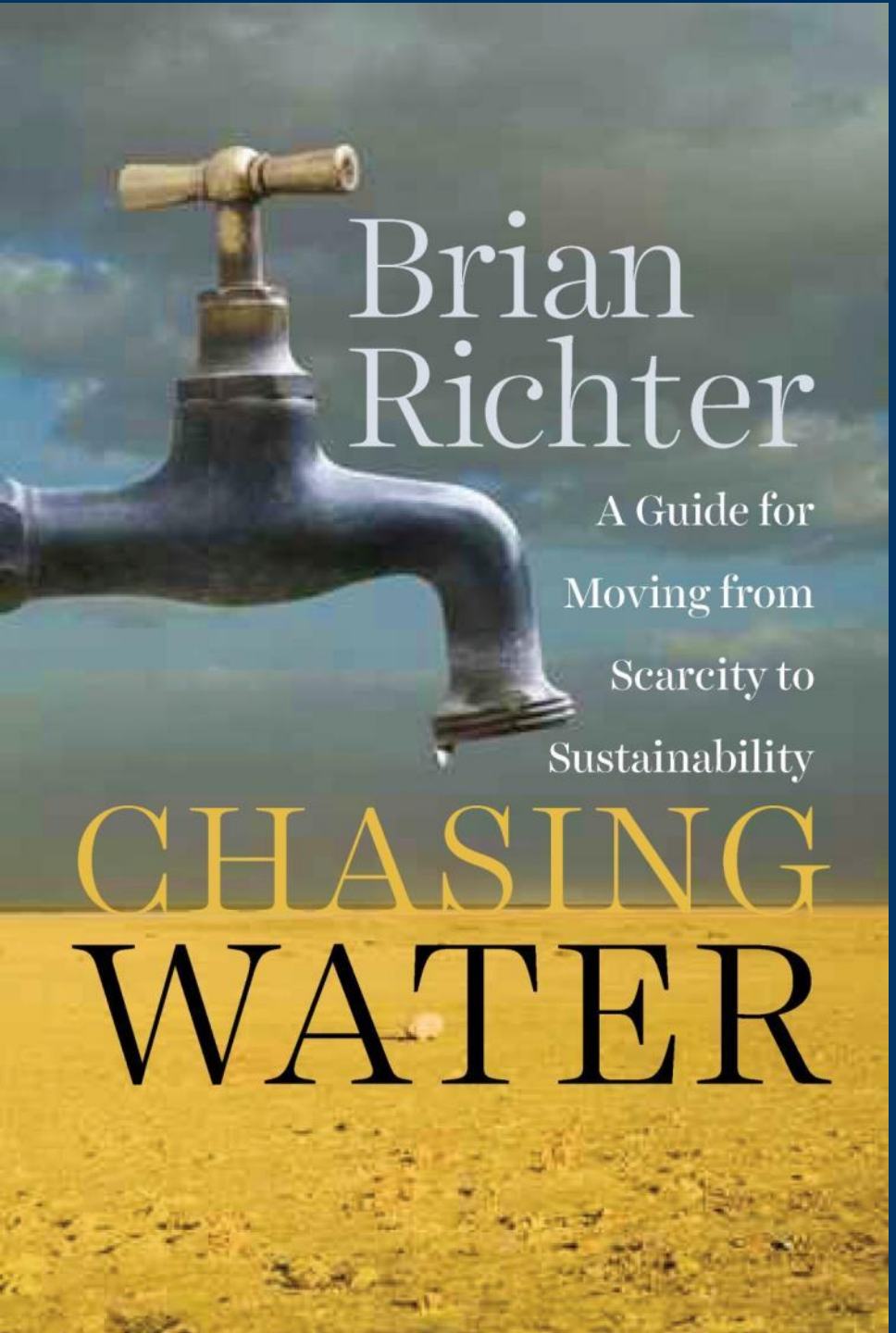
Colorado River Delta, Mexico

Photo: Jonathan Waterman

Photo: Blue Legacy/Oscar Durand


WHICH
WAY
TO GO?


SOLUTIONS
AHEAD

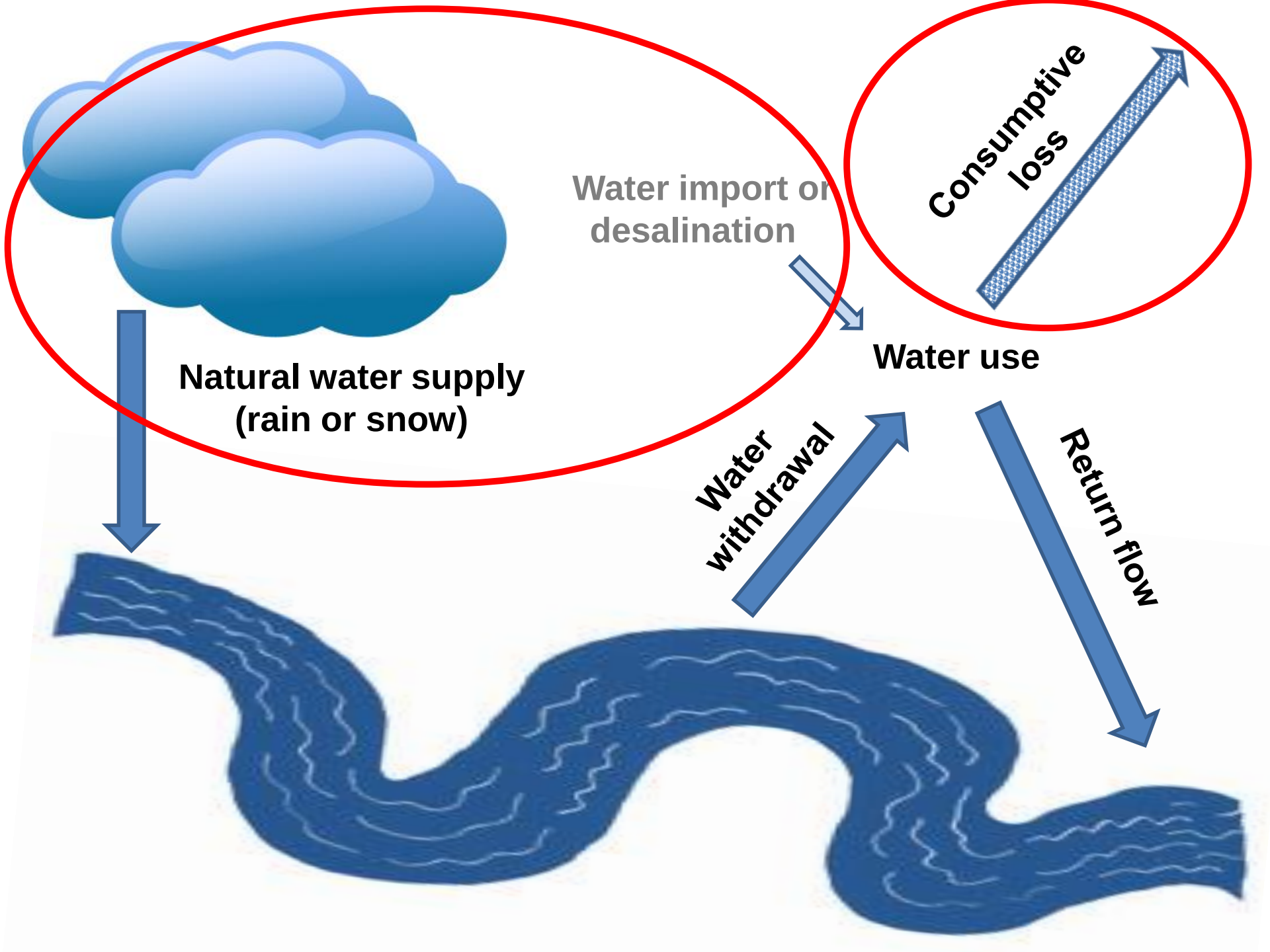


Who is experiencing water shortages, and where?

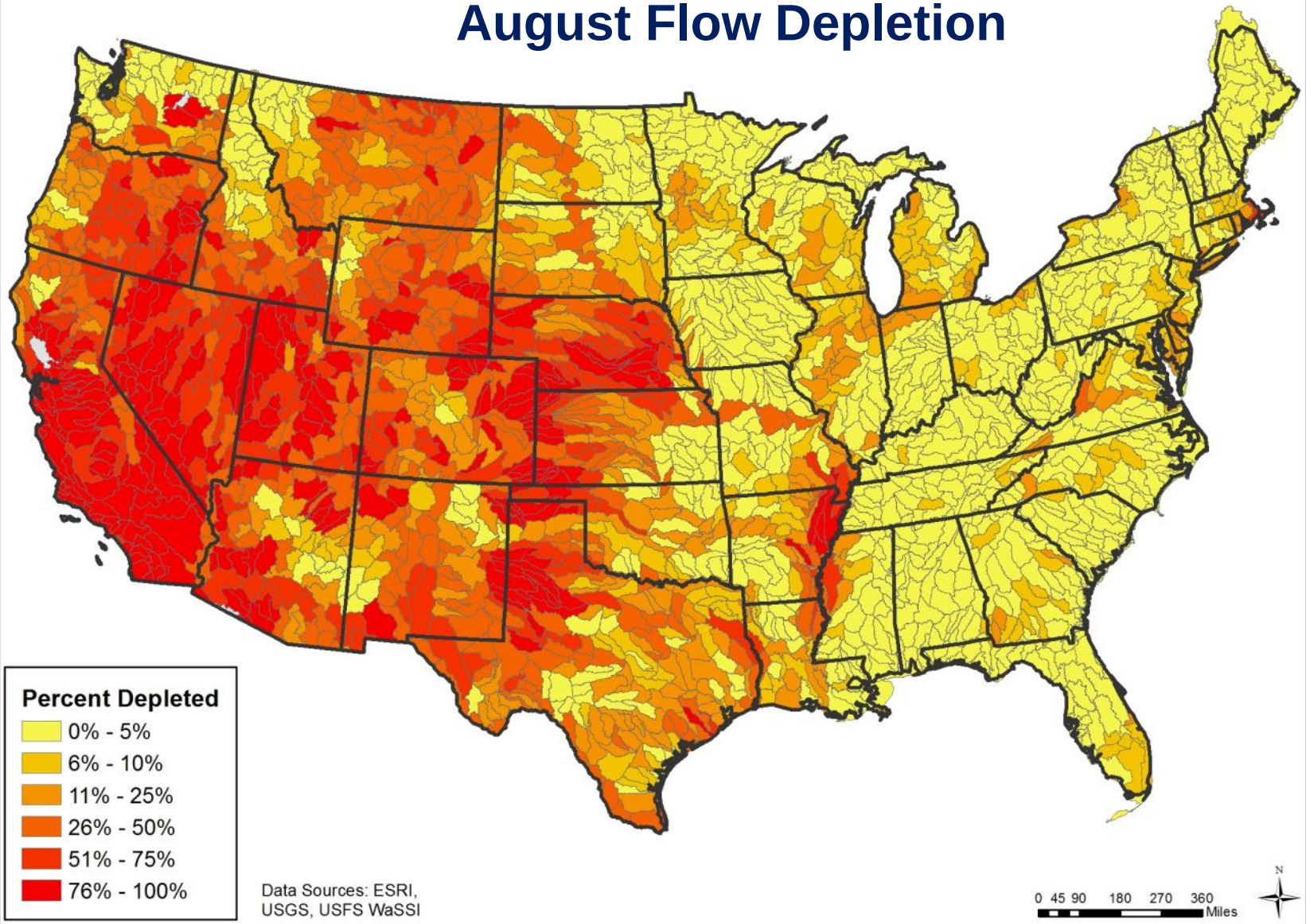
What happens to people and other species when water shortages occur?

Why do communities and countries run short of water?

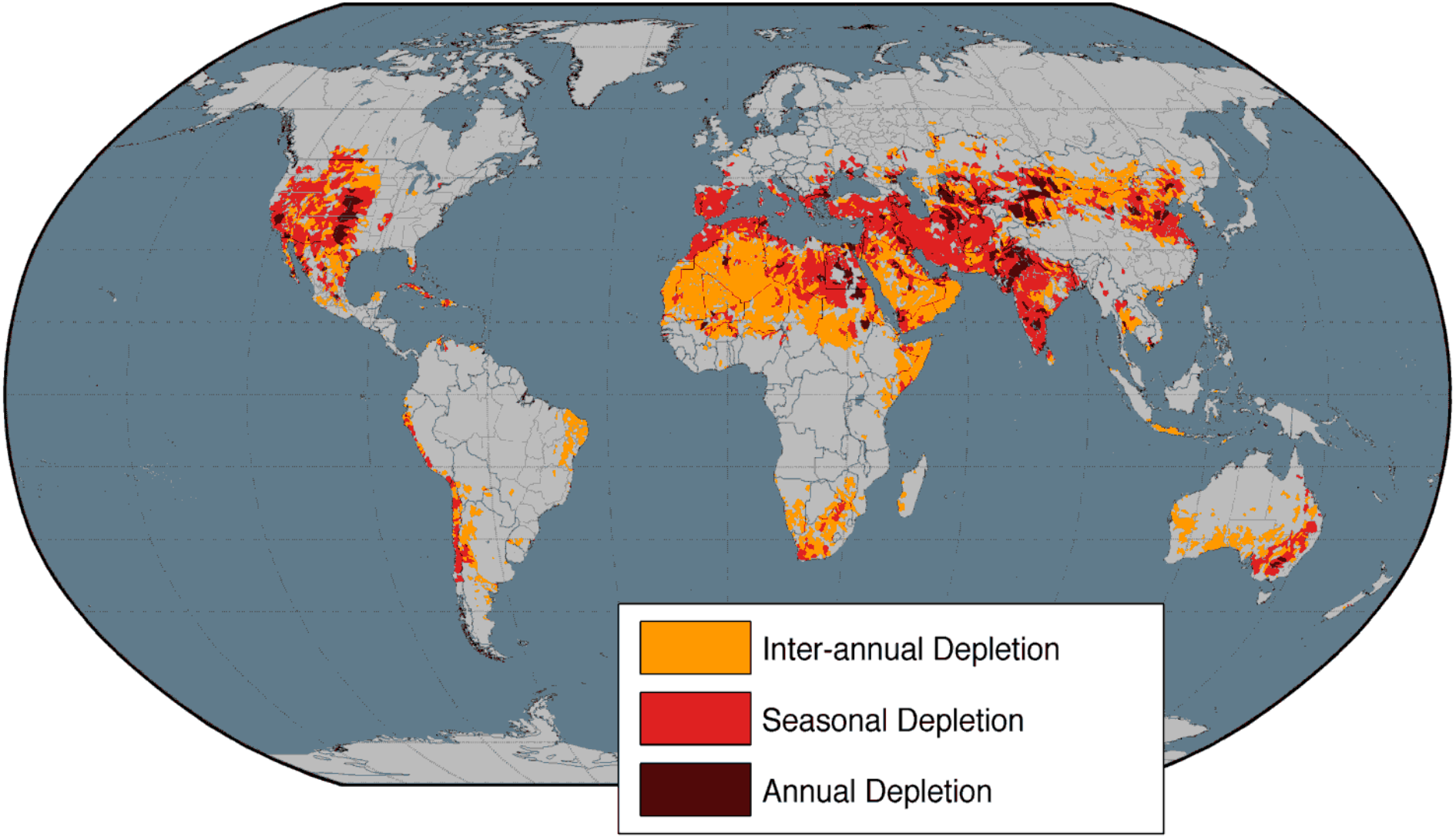
Is there some way to avoid shortages, or overcome them once afflicted?


Water import or desalination
Consumptive loss
Natural water supply (rain or snow)
Water use
Water withdrawal
Return flow

August Flow Depletion

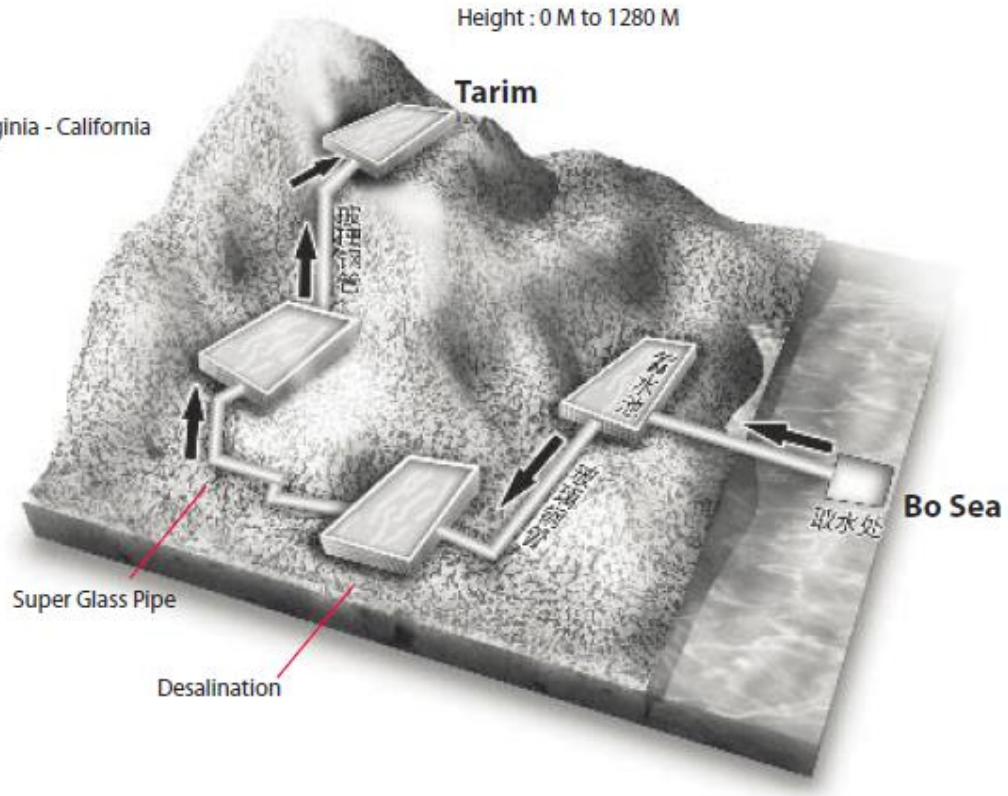


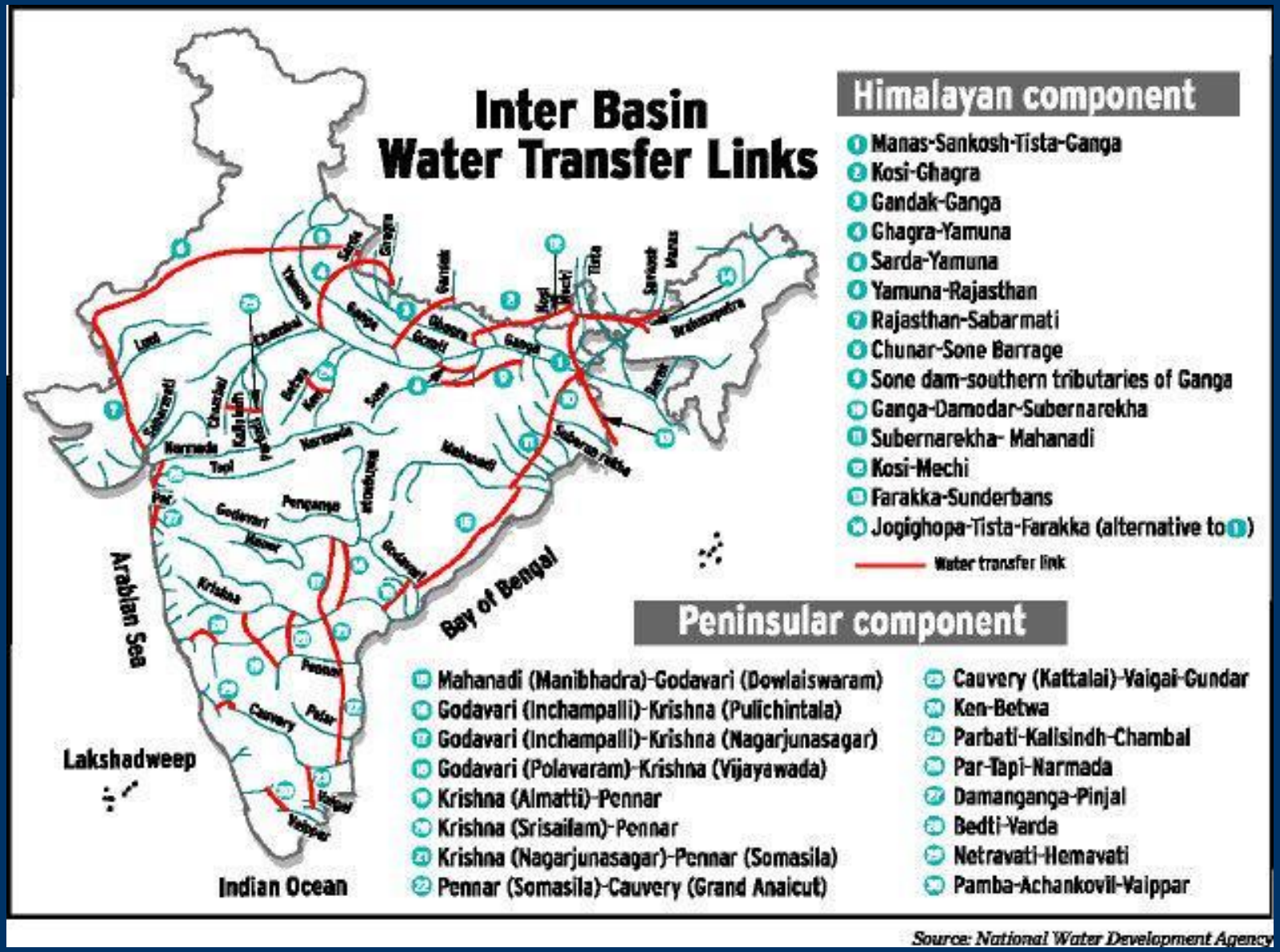
Running Dry



Water shortages are occurring in 1/3 of the planet's watersheds and aquifers
1/2 of the world's population is affected
3/4 of the world's irrigated acreage is affected

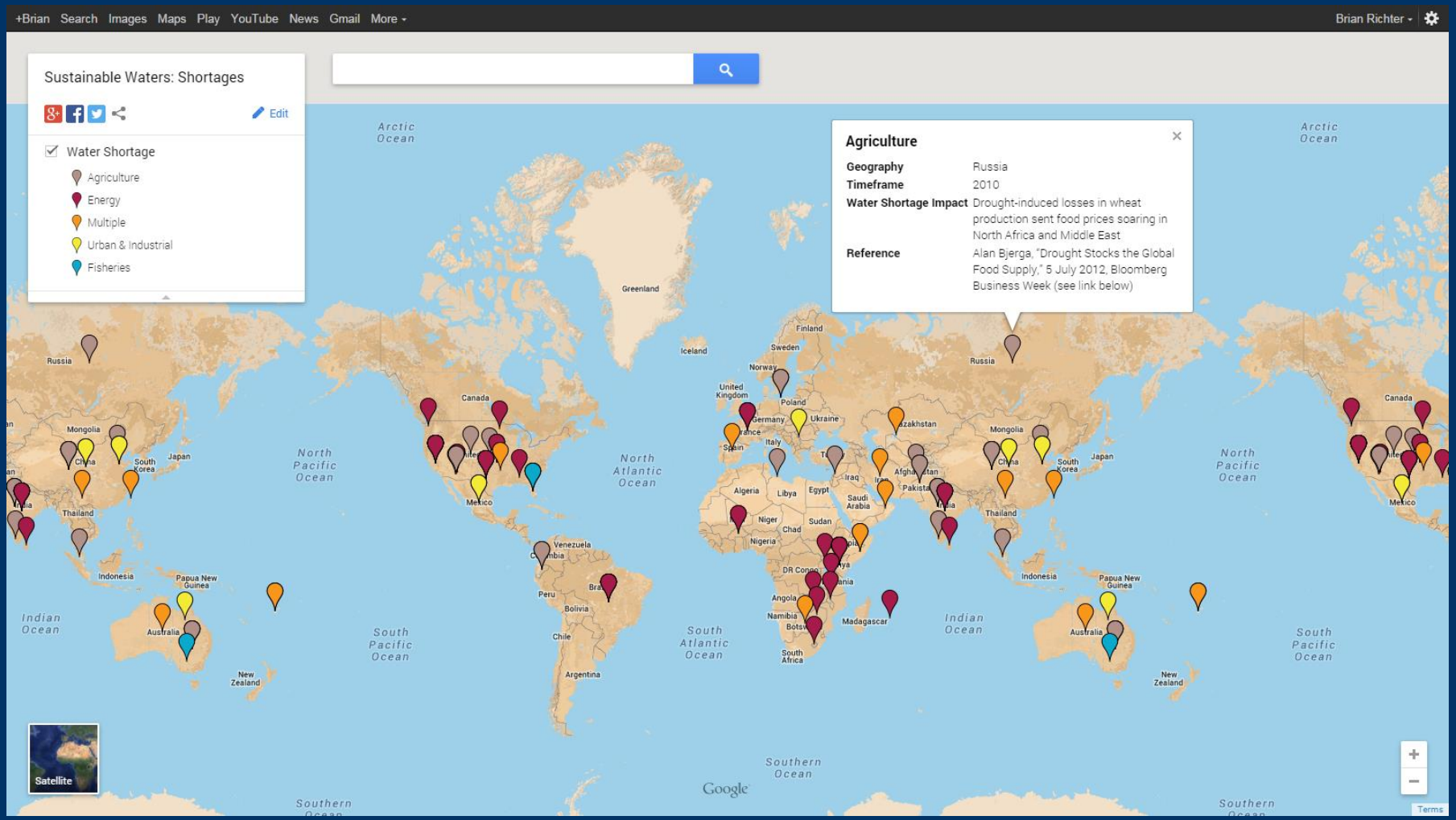
Distance:
About Virginia - California





Source: National Water Development Agency

Impacts of Water Shortages



www.sustainablewaters.org

Deadly for freshwater species & ecosystems

Devastating to local economies & food security

Texas lost $12B in 2011

China:
Losing industrial and agricultural output of $39B/yr

Jeopardizing energy security

Hydropower down >20% in Colorado River

Threatening human health

A child dies every 20 secs due to water-related disease

Increasing Water Scarcity

Low	Moderate	Significant	Severe
Minimal impacts	Ecological impacts appear	Impacts to ecosystem services appear	Serious economic & security impacts

Full natural availability

20% depletion of renewable supply

50% depletion

75% depletion

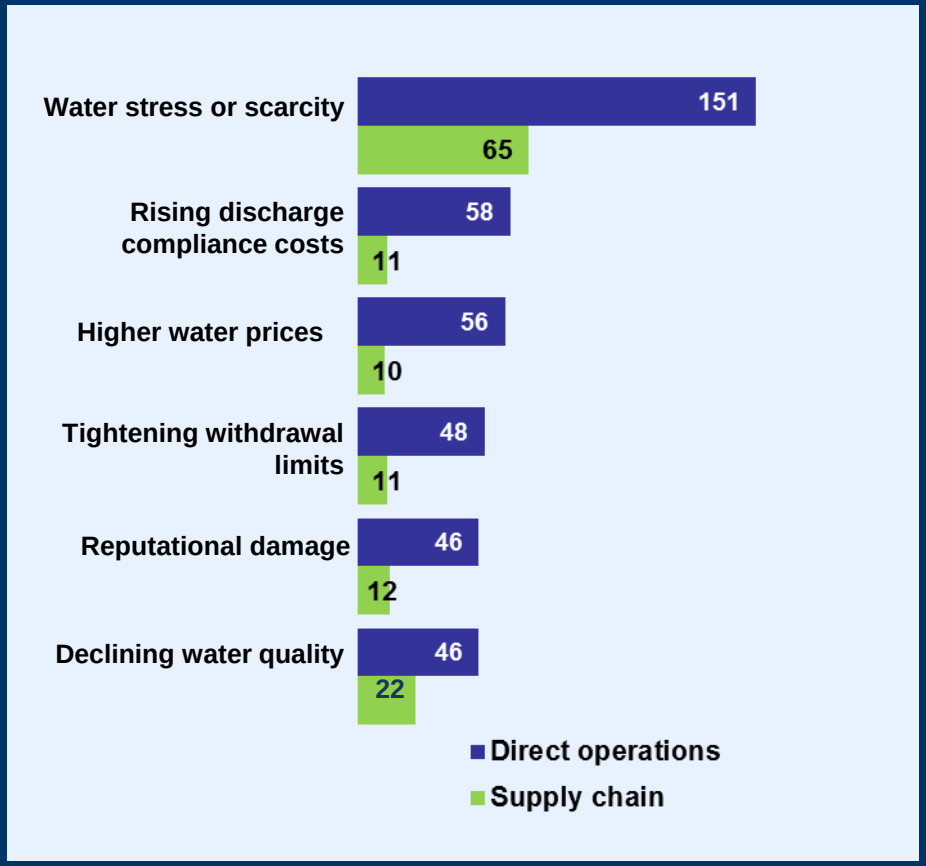
Water all gone

Increasing business risk

70%

Companies reporting exposure to substantive water risks

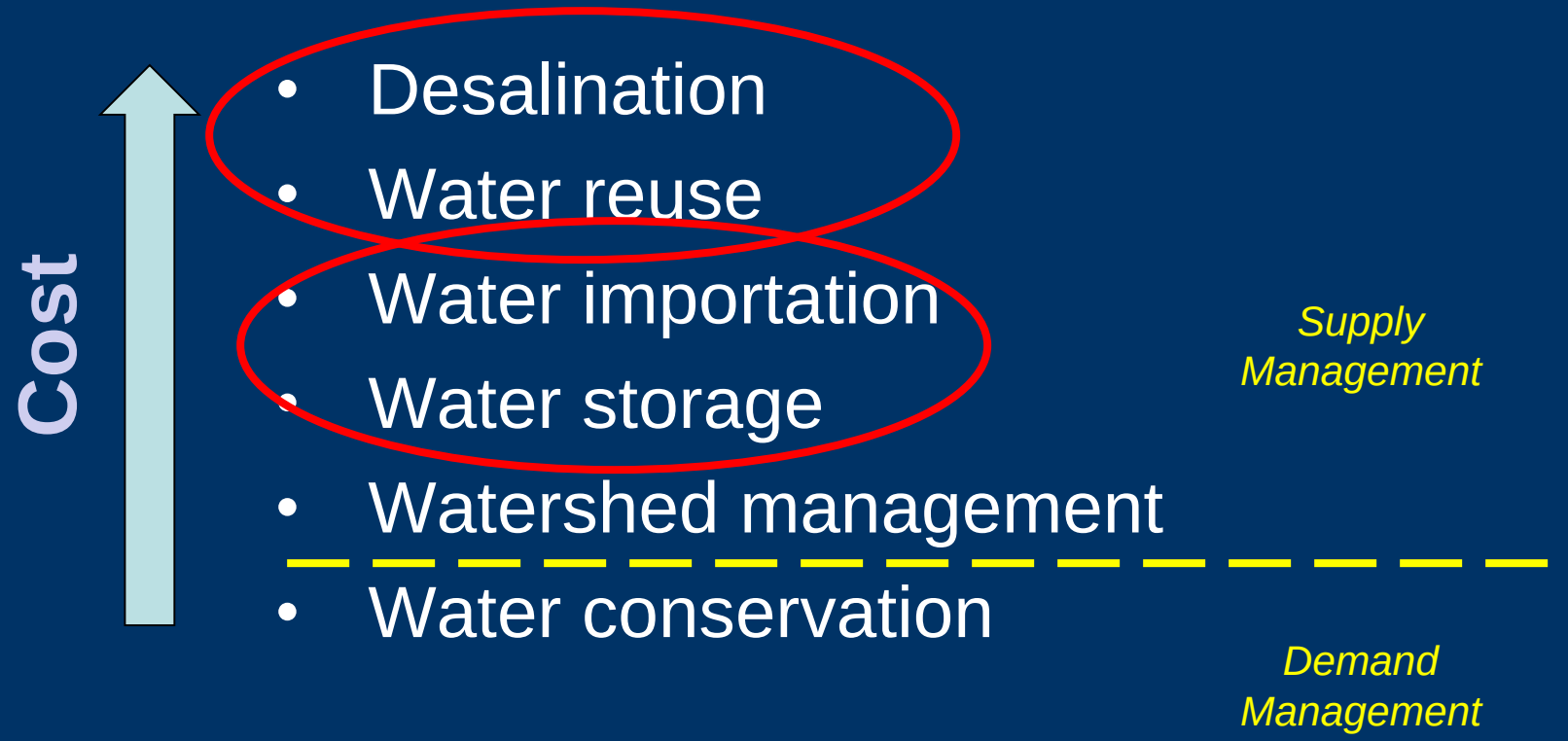
19% increase from 2011



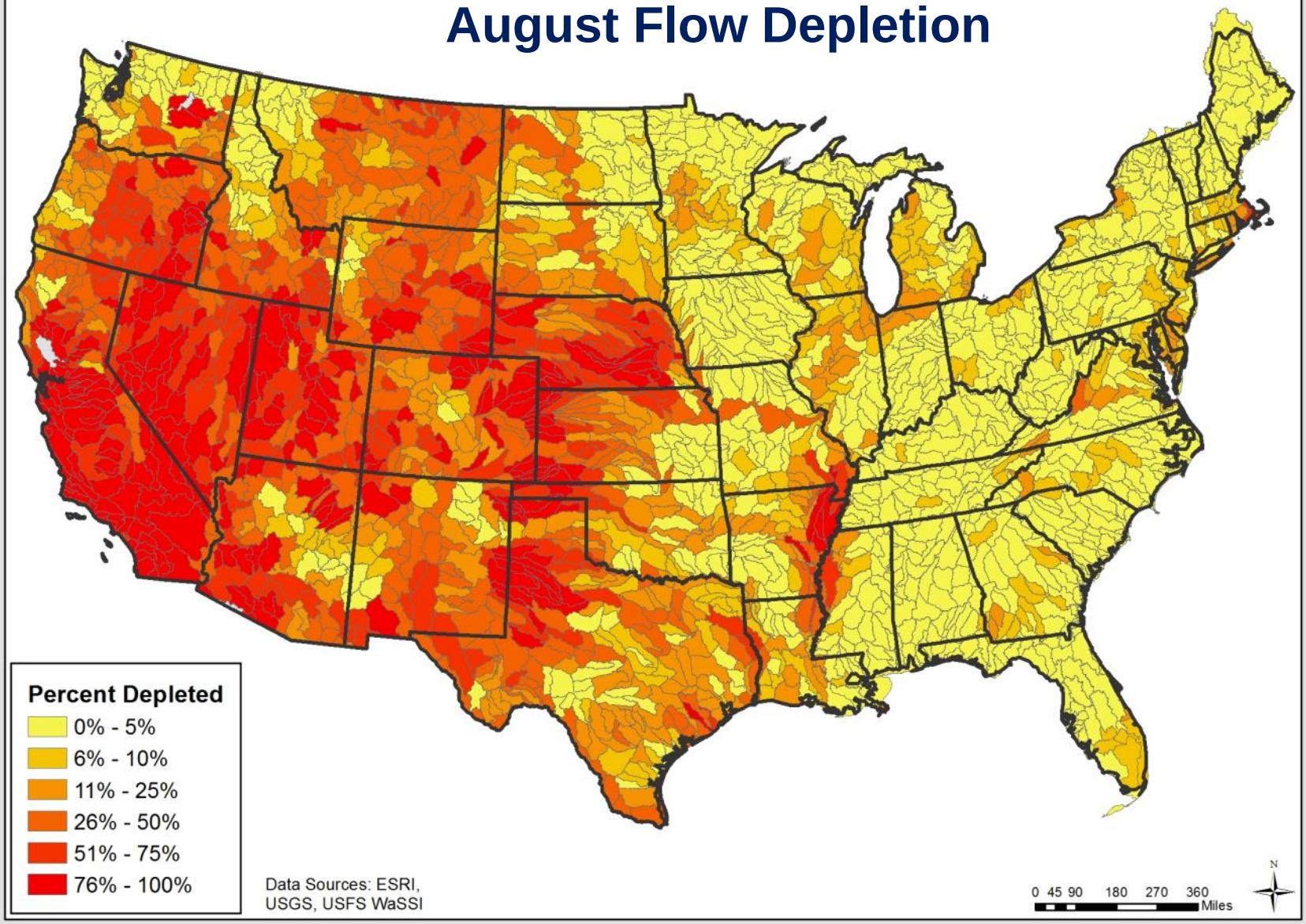
Source: CDP and Norges Bank Investment Management

Water shortages flagged by World Economic Forum as #1 global risk

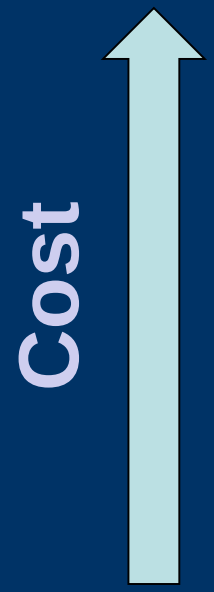
Six Ways to Fix a Water Shortage (or restore a freshwater ecosystem)



August Flow Depletion



Six Ways to Fix a Water Shortage (or restore a freshwater ecosystem)



- Desalination
- Water reuse
- Water importation
- Water storage
- Watershed management
- Water conservation

Supply Management

Demand Management

CONSERVATION
Main
Drought Restrictions
Year-Round
Stage 1
Stage 2
Stage 3
Stage 4
Variance Requests
Outdoor Conservation Programs & Rebates
Indoor Programs & Rebates
Commercial Programs & Rebates
Your Role in Conservation
Ordinance
Conservation Case Studies
Calendar of Events
Request Information

Drought Restrictions

San Antonio Water System uses drought restrictions, established by city ordinance, to proactively manage the region's water resources. The restrictions limit water use based on specific levels of the Edwards Aquifer. City Council approved new drought level triggers in 2009.

Year-Round

Year-Round watering restrictions are in effect when the Aquifer level is above 660 feet mean sea level at the mo

READ MORE

Stage 1

Stage One begins when the aquifer level reaches 660 fe level at the monitored well.

READ MORE

Stage 2

Stage Two begins when the aquifer level reaches 650 fe level at the monitored well.

READ MORE

Stage 3

Stage Three begins when the aquifer level reaches 640 level at the monitored well.

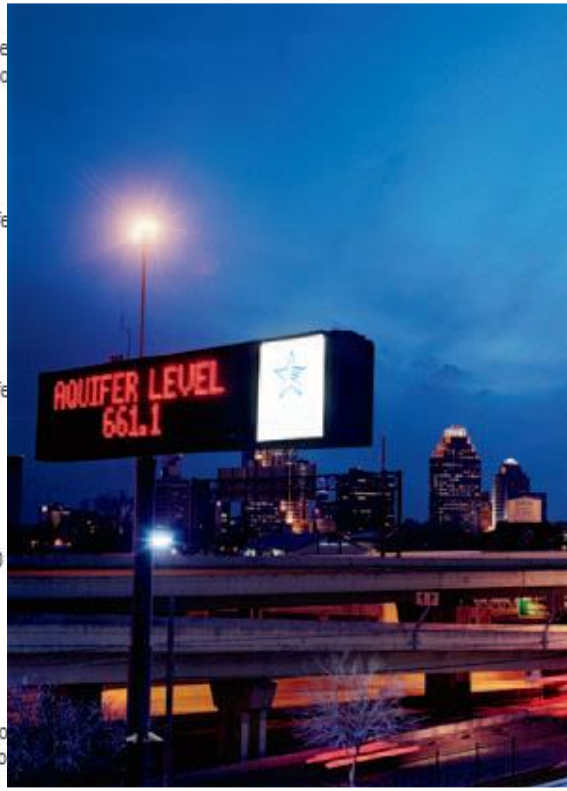
READ MORE

Stage 4

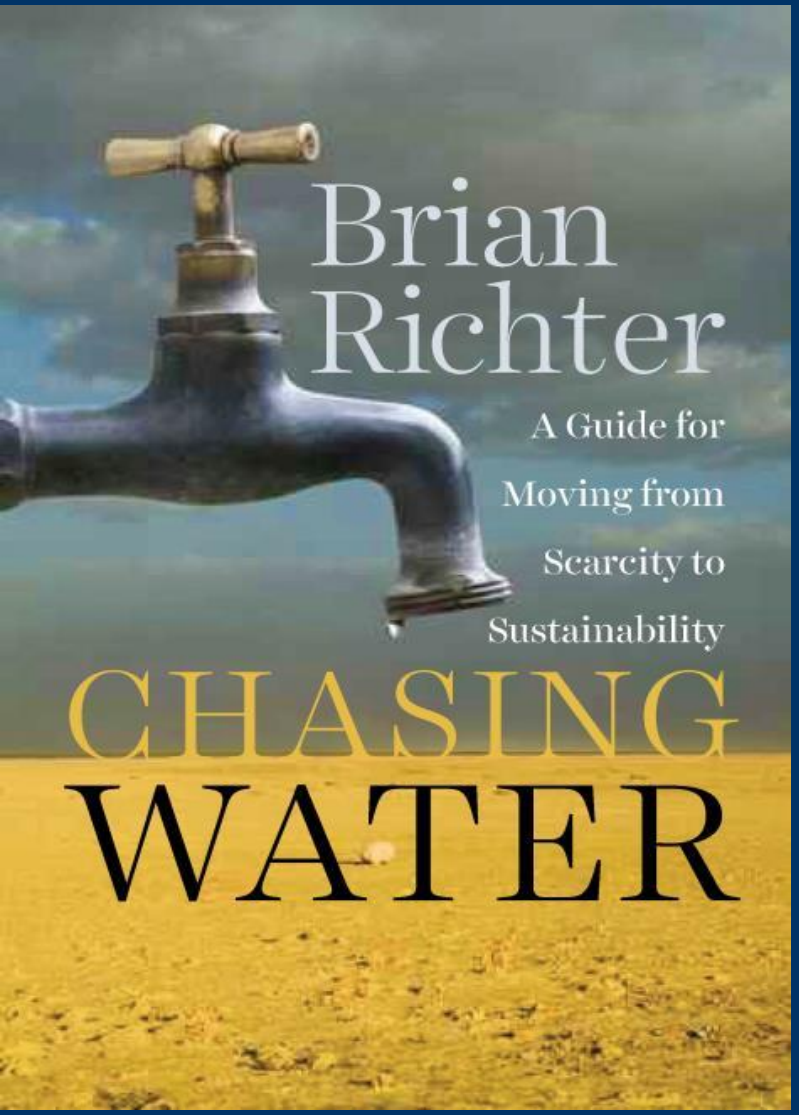
Stage Four restrictions may be declared at the discretio Manager upon completion of a 30-day monitoring perio Stage Three declaration.

READ MORE

QUICK LINKS
Variance Requests
Low-Water Plant List
Ordinance
All Programs & Rebates



Australian cities use half as much water as western US cities, on average

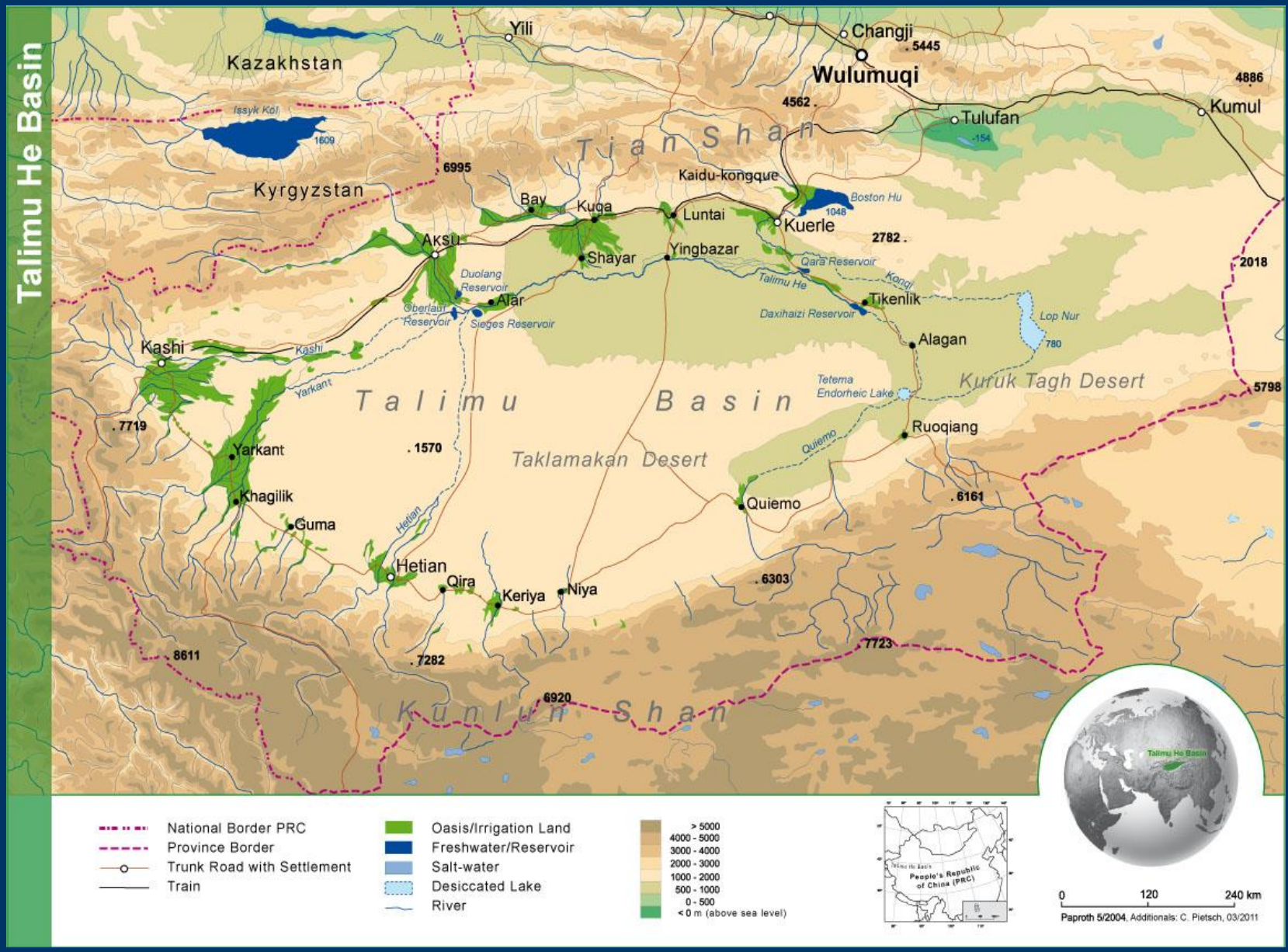


Recipe for Sustainability

- Save water
- Share water
- Cap water use


Murray Darling Basin
Queensland
South Australia
New South Wales
Victoria
Tambo
Augathella
Charleville
Morven
Roma
Chinchilla
Dalby
Tara
Toowoomba
Bollon
St George
Cunnamulla
Warwick
BRISBANE
Goondiwindi
Stanthorpe
Hungerford
Moree
Tenterfield
Walgett
Wanaaring
Bourke
Narrabri
White Cliffs
Darling River
Armidale
Coonamble
Gunnedah
Coonabarabran
Tamworth
Cobar
Wilcannia
Broken Hill
Menindee Lakes
Dubbo
Wellington
Ivanhoe
Forbes
Orange
Lachlan River
Bathurst
Cowra
Lake Victoria
Morgan
Wentworth
Renmark
Mildura
SYDNEY
ADELAIDE
Hay
Griffith
Leeton
Young
Murrumbidgee River
Narrandera
Balranald
Murray River
Mannum
Murray Bridge
Gundagai
Yass
Goolwa
Wagga Wagga
Swan Hill
Meningie
Lake Alexandrina
Deniliquin
CANBERRA
Kerang
Albury
Echuca
Wodonga
Hume Dam
Cooma
Shepparton
Horsham
Dartmouth Dam
Bendigo
Seymour
Omeo
MELBOURNE
0 km 100 200

Tarim River, China

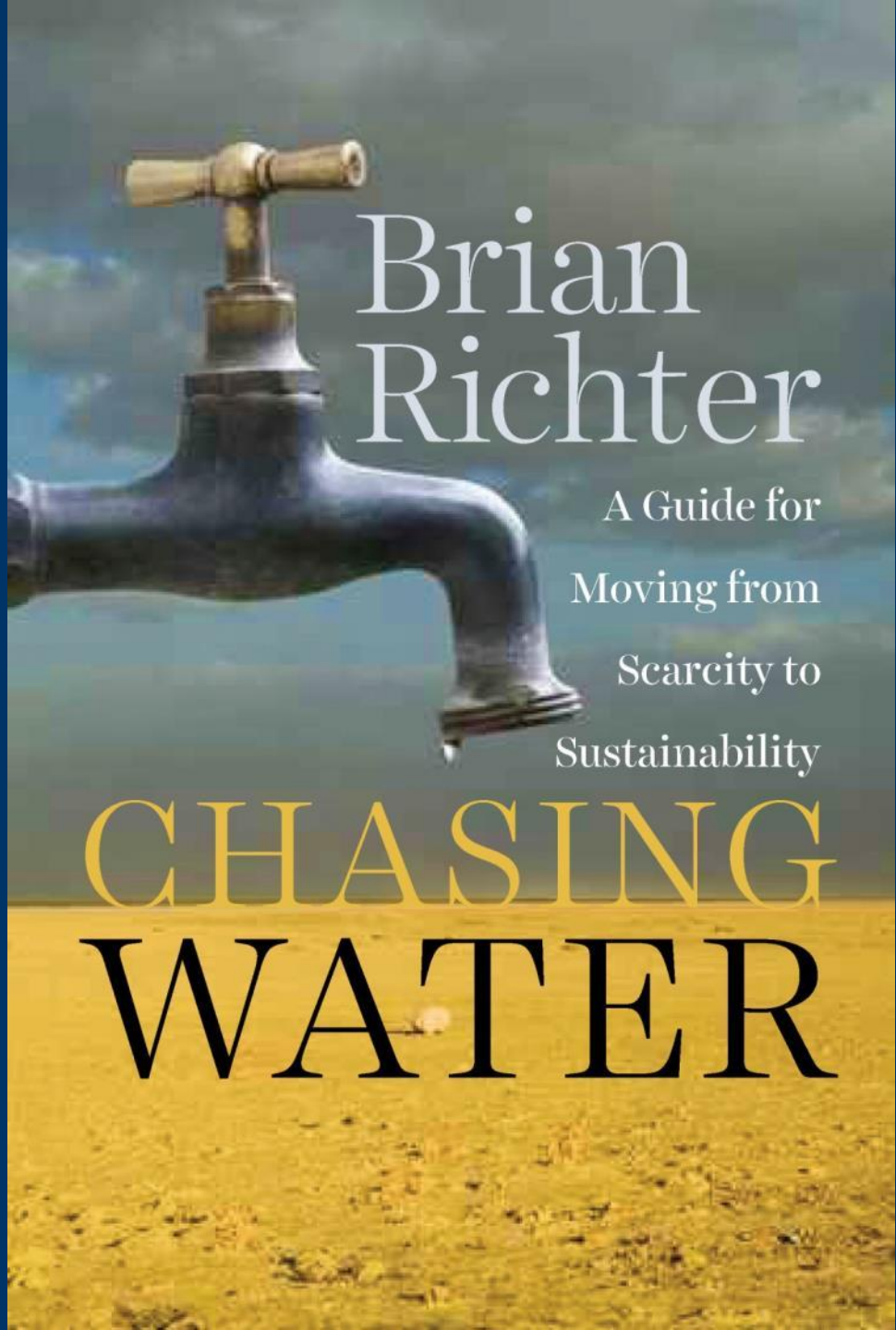


Lily Deng, Tarim River, China

Tarim River, China

Colorado River Delta, Mexico

Colorado River Delta, Mexico, June 2014
Photo: Cheryl Zook, National Geographic


Brian
Richter
A Guide for
Moving from
Scarcity to
Sustainability
CHASING
WATER