

# Payment for Watershed Environmental Services to Secure Urban Water Supplies and Mitigate Climate Risks:

## The Nature Conservancy's Experience with Water Funds

September 16, 2013

# AGENDA

- Introductions (*Stefano Pagiola*)
- TNC's **Securing Water Strategy** Overview (*Adam Freed*)
- **Latin American** Water Funds Partnership: Approach and Results (*Fernando Veiga*)
- Video: Conserving watersheds in Colombia
- **Brazil**: the case of Espirito Santo (*Gunars Platais/Suelma Rosa/Gilberto Tiepolo*)
- **Peru**: the case of Piura (*Gustavo Perochena/Juan José Rodríguez*)
- **Africa**: South-South exchange the case of Nairobi (*Greg Overton*)
- Conclusions/Final Remarks (*Stefano Pagiola*)



The Nature  
Conservancy



Conservando la naturaleza.  
Protegiendo la vida.



# Adam Freed

Securing Water Strategy  
Director



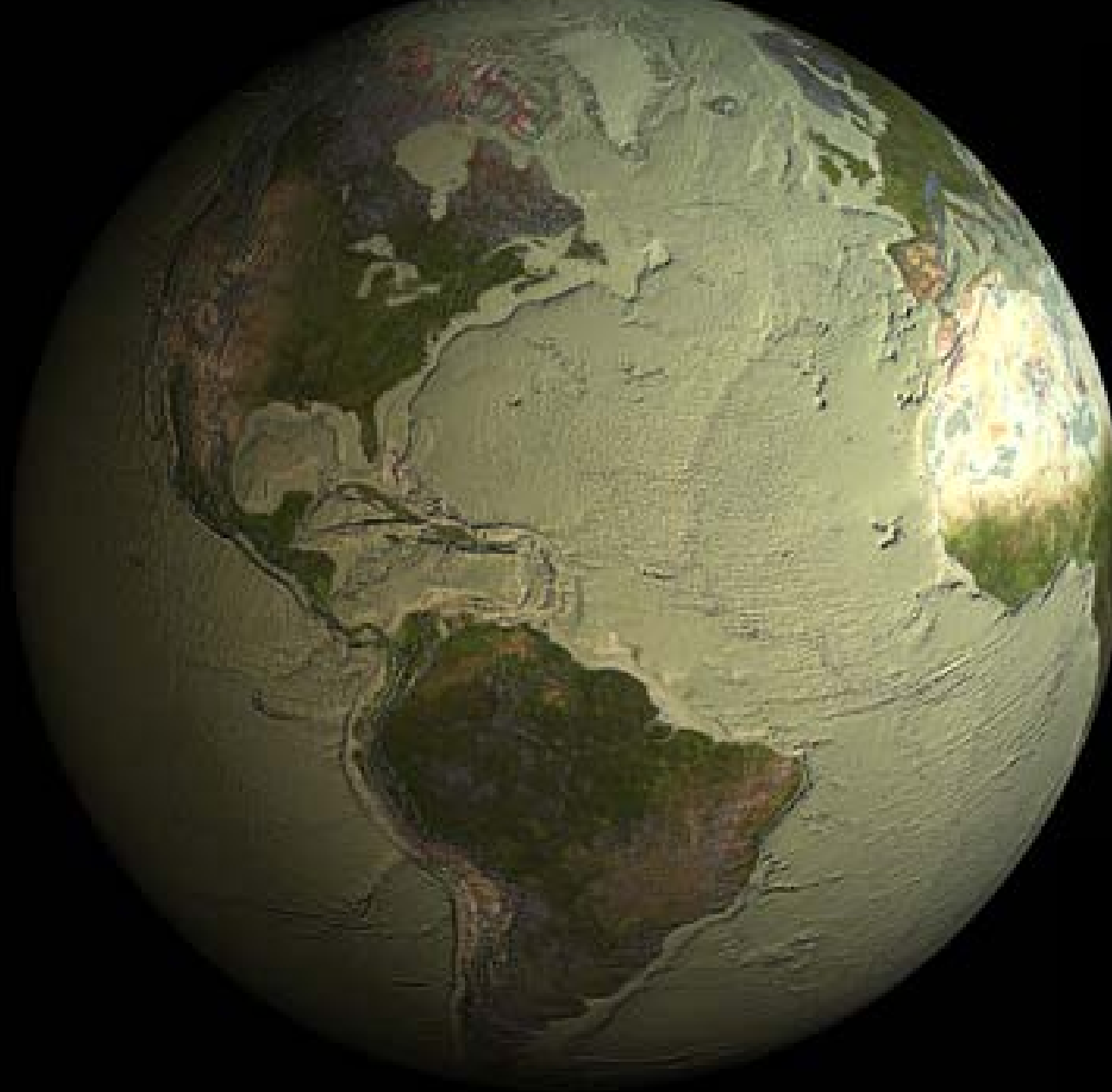
# Securing Water Program





# The challenge

# Water on Earth is a limited and scarce resource

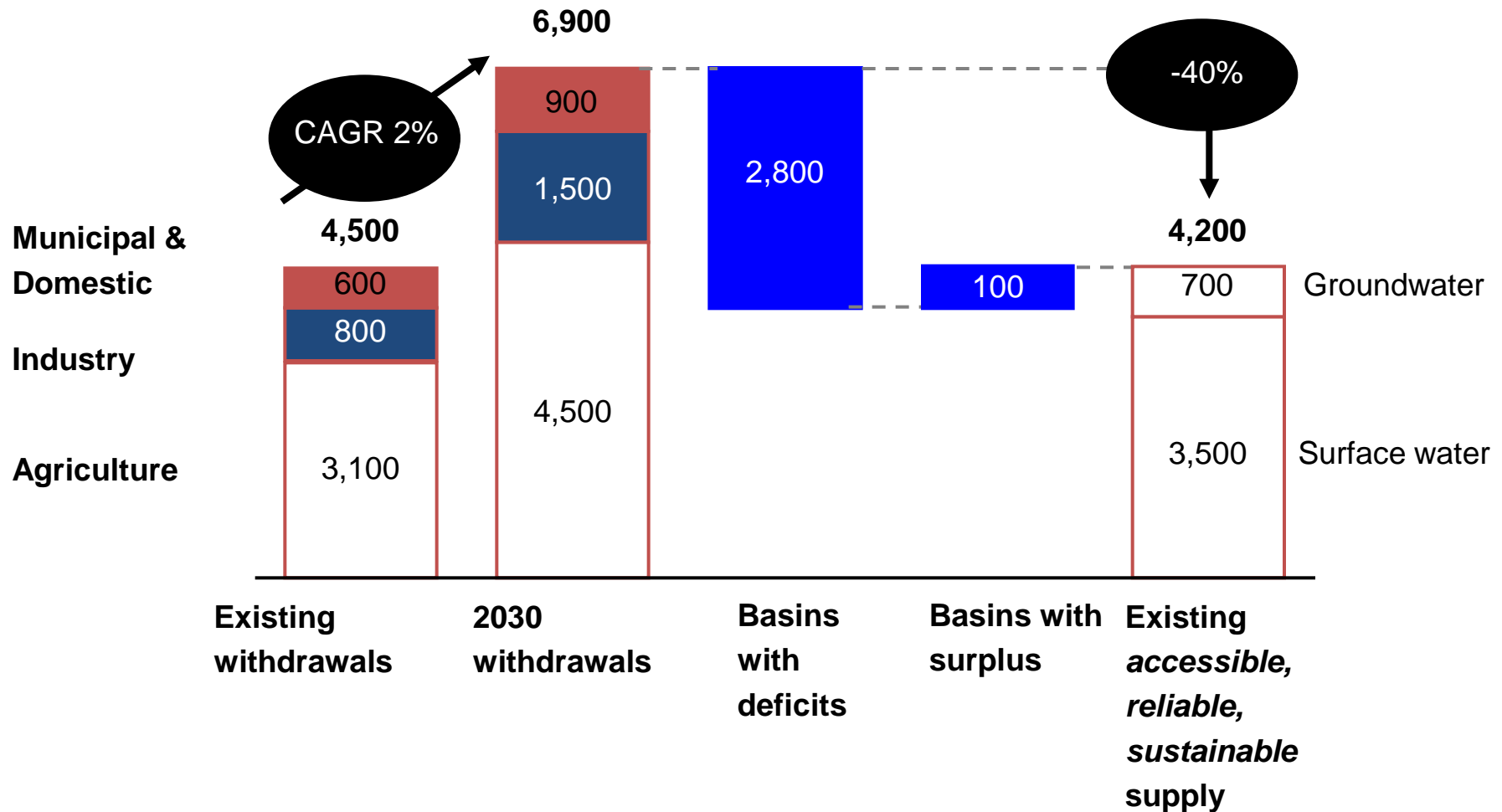


Salt water 96.5%

Groundwater	1.7%
Ice	1.77%
Marshes, rivers	0.03%
Atmosphere	0.001%

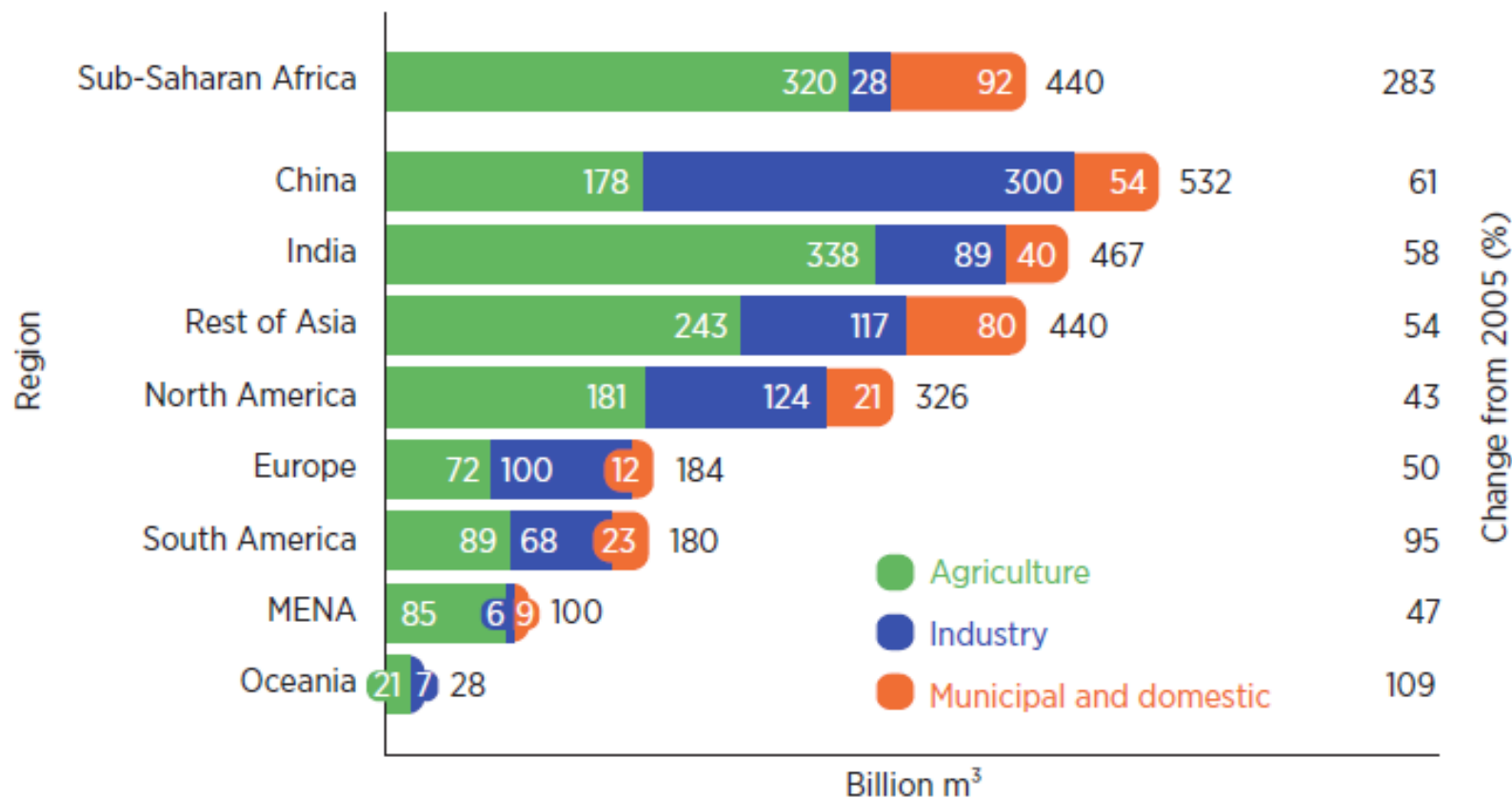
# Future demand will outstrip our capacity to provide it

Billion m<sup>3</sup>



# Increases in water demand vary by region

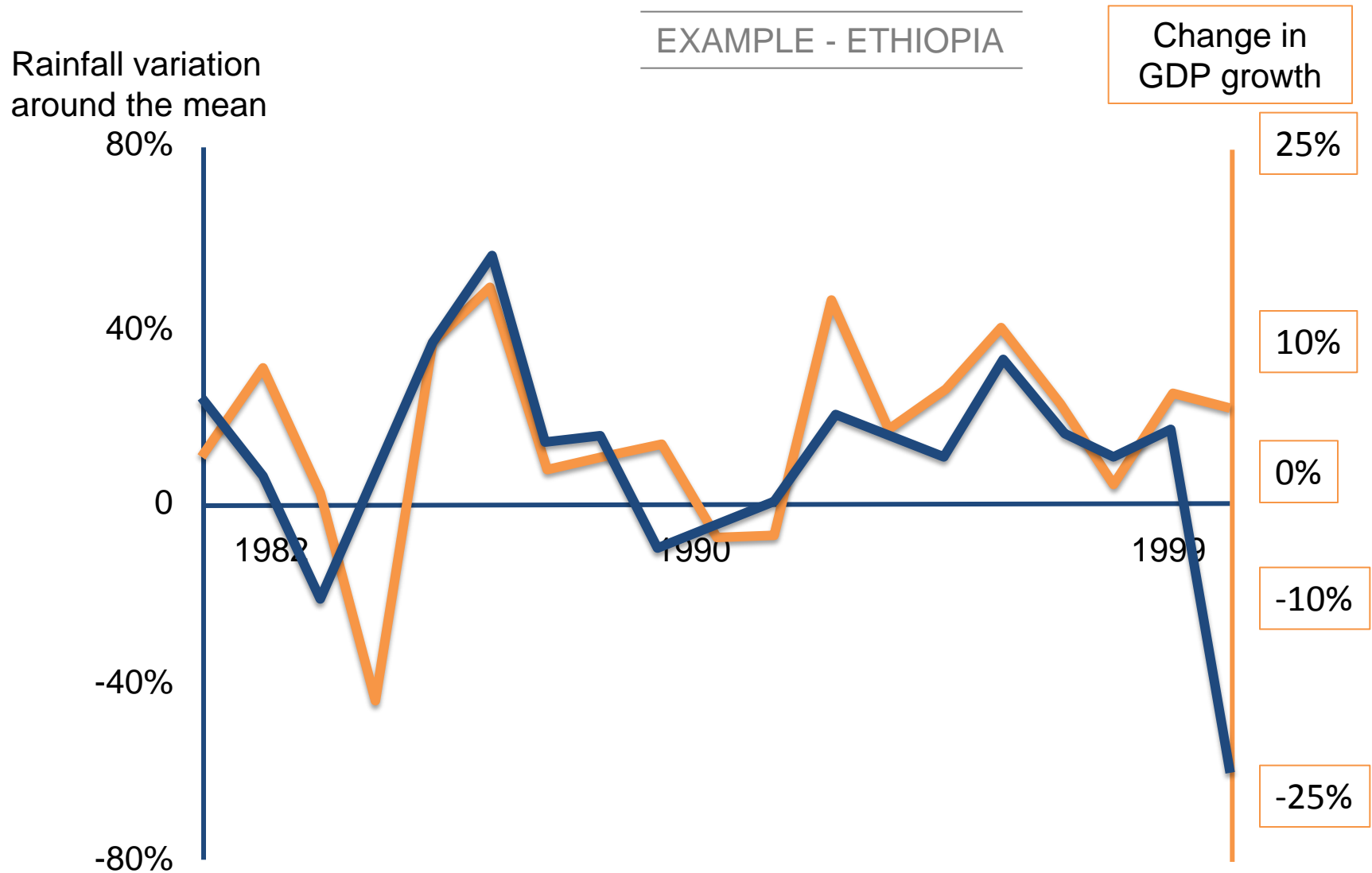
## Increase in annual water demand, 2005 to 2030



MENA – Middle East and North Africa

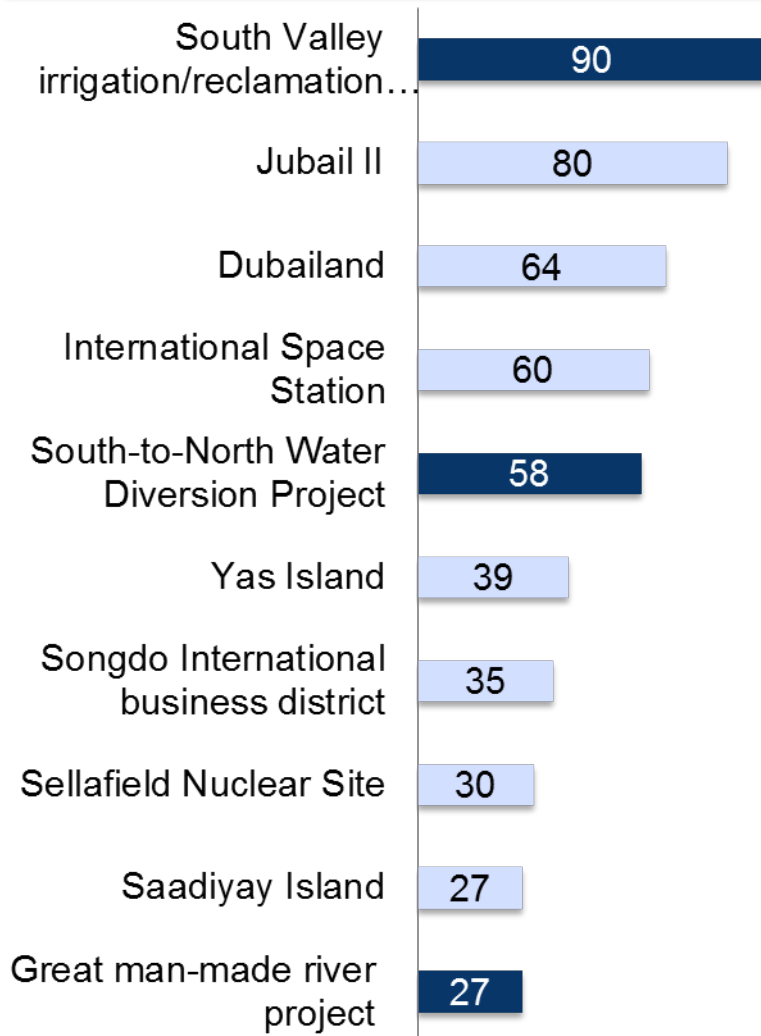


# Water is a central determinant of economic growth



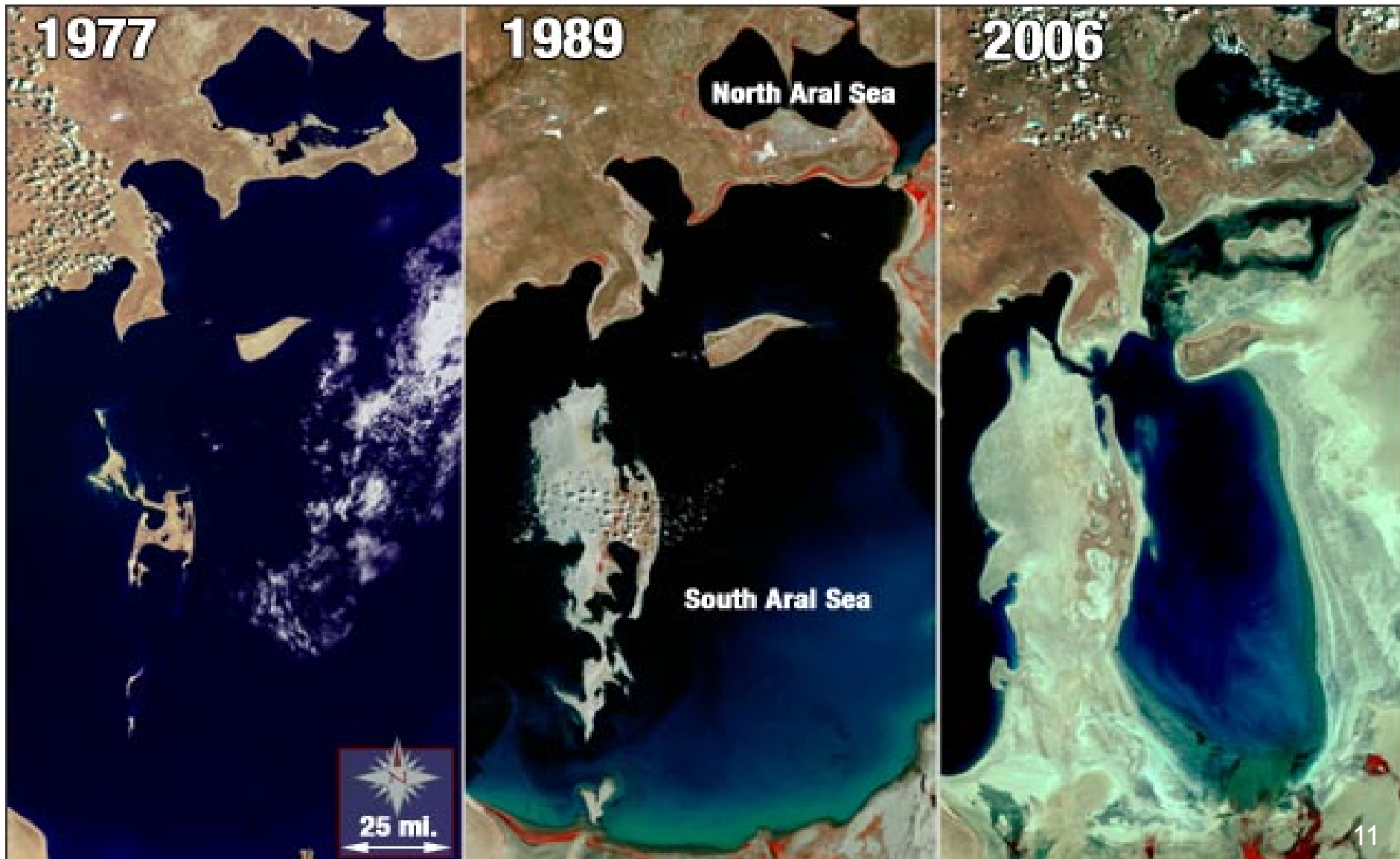
# Our answer to these challenges today is grey infrastructure

## 10 largest mega-projects by expenditure USD bn



# Our business as usual solutions will not be sustainable in the long run...

Satellite view of the progressive drying due to irrigation abstraction, Aral Sea, 1977-2006



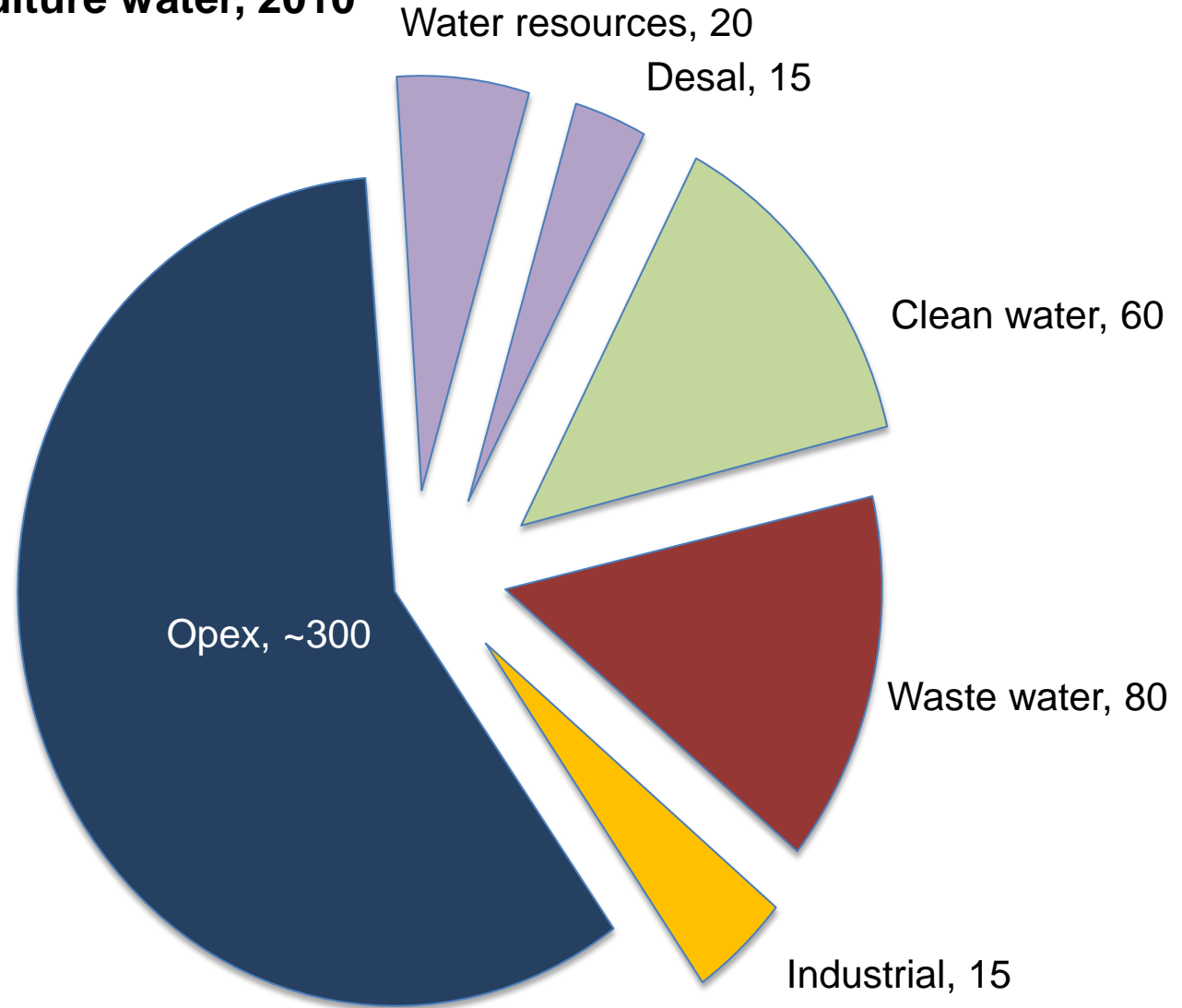


# The opportunity

# Our goal: redirect 10% of global capital spending to natural infrastructure

## Global annual expenditure water, 2010

Total ~USD 500 bn

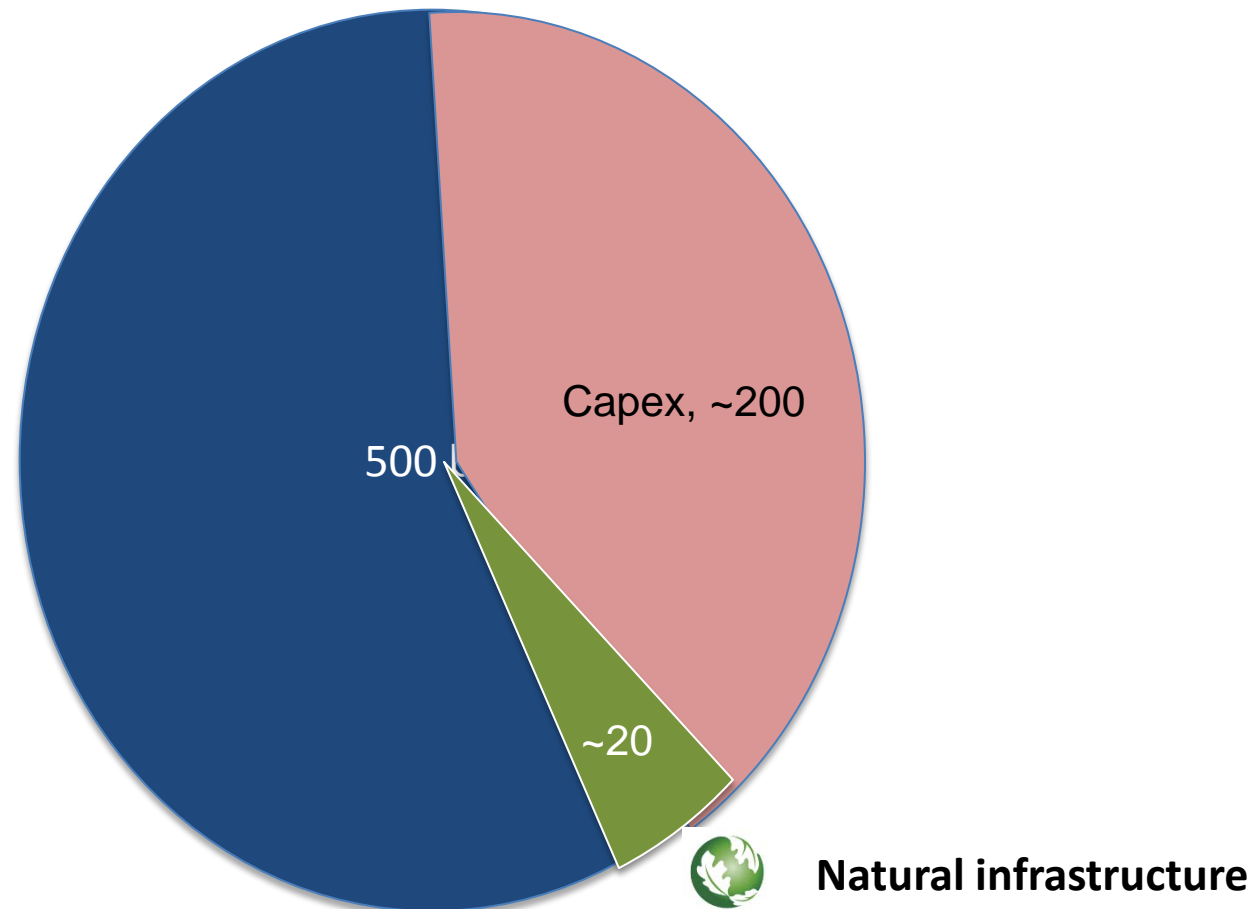




# Our goal: redirect 10% of global capital spending to natural infrastructure

## Global annual expenditure water, 2010

Total ~USD 500 bn



# TNC has solutions that can integrate natural infrastructure



## Water resources



### Traditional intervention

River operating infrastructure

Flood management infra

Irrigation infra and technology

Water infra for industry

Clean water supply infra

Waste and storm water infra



### TNC solution

▶ River infra master-planning & re-design

▶ River infra re-operation

▶ Floodplain reconnection

▶ Ag basin efficiency interventions

▶ Non-point pollution management

▶ Watershed stewardship

▶ Catchment protection

▶ Water rights purchase

▶ Nat infra flood/storm water



## Water services



# TNC has solutions that can integrate natural infrastructure

## Can we....



### Water resources



Convert 10% of global hydro to better solutions?

Increase sustainability for 10% of existing river infrastructure?

Protect 100 million people by reconnecting floodplains?

Increase productivity and reduce demand in at least 10% of basins?

Increase absorptive capacity of ag pollutants by wetlands by at least 10%?



### Water services



Increase adoption of stewardship practices in 10% of agriculture value chain?

Increase investments in natural infrastructure in the water supplies of 50 of the world's largest cities?

Create a fund to trade ~5% of water rights in key water markets?

Support the creation of natural storm water infrastructure in 50 of the world's largest cities?

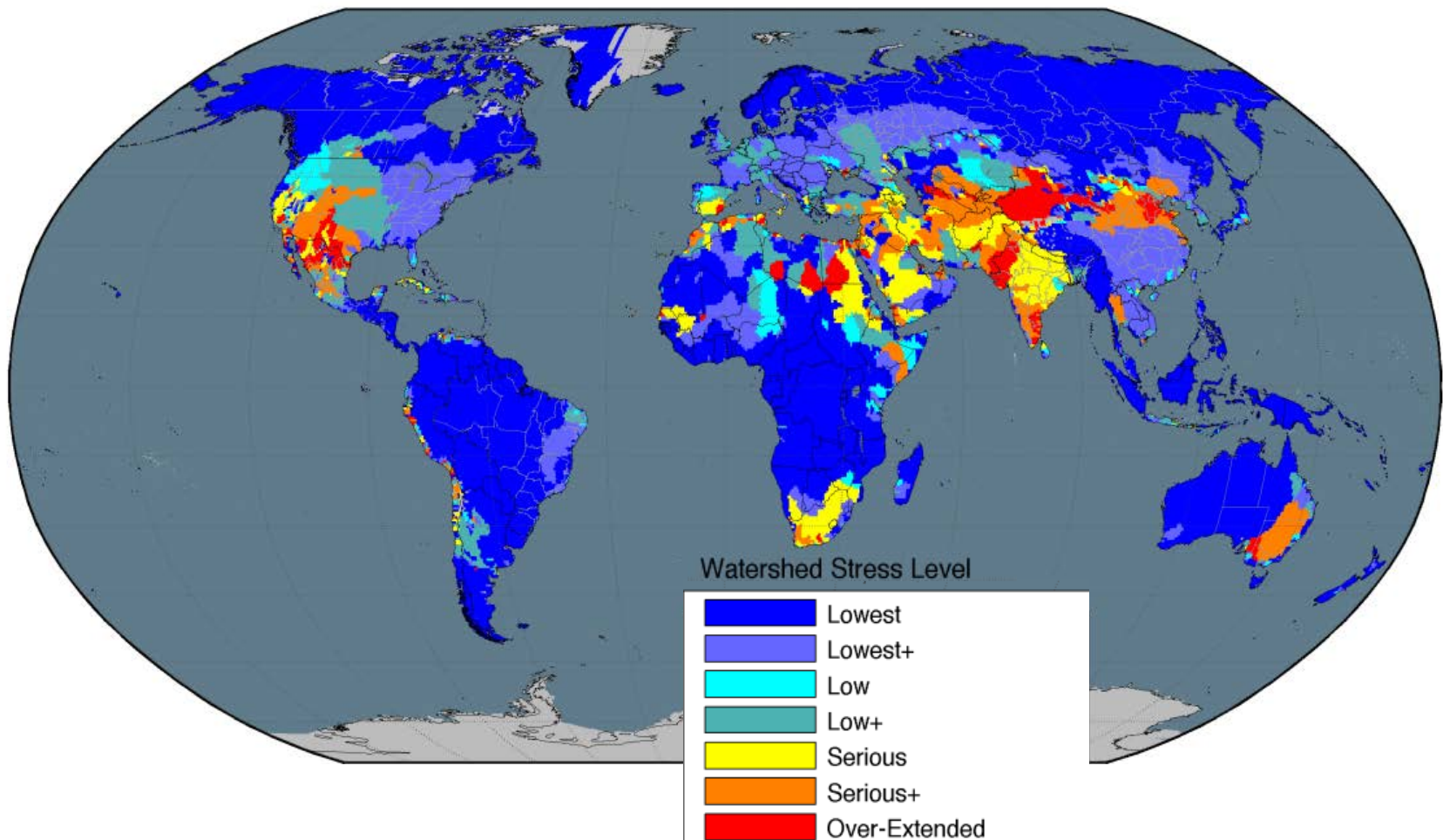


# Our focus

# In many ways, cities are the center of water issues

## At-risk of water-scarcity

- While only 15% of water basins are water-stressed, approximately 50% of all cities over 100,000 people are in these basins.





# In many ways, cities are the center of water issues

## **Sources and focus of infrastructure spending**

- Between 60-70% of infrastructure spending in the water sector will be focused on cities.
- 75% of water infrastructure funding is provided by local or regional government entities.

## **Willingness to pay**

- Cities have a relatively inelastic demand and willingness to pay for water and therefore are an important point of leverage in balancing water use.

# The Conservancy is currently working in more than 30 large cities on water issues





# Our solutions

# Payment for ecological services (PES) programs, such as Water Funds, are a key tool

- Cities fund a majority of urban infrastructure, but often are capially-constrained
- Cities lack mechanisms for regional planning and governance
- Decision-makers often do not understand the value of nature
- Ad hoc measures may not have a material impact on water supplies



- Water Funds and partners provide a steady stream of funding
- Water Funds provide forums for regional planning and action
- TNC and partners can provide tools and technical assistance
- Water Funds provide an opportunity for strategic actions and measurement

# Our actions must be data-driven and monitored to make sure they are impactful and material



**RIOS** Resource Investment Optimization System 

## Designing cost-effective investments in watershed services

### Water Scarcity

Water is one of the scarcest resources on the planet, and pressures on it will only grow as demands on water supplies grow and climate changes. Every year, \$400 billion is spent on water infrastructure. People are starting to recognize that investments in nature, as part of a comprehensive approach for water management, are a cost-effective way to secure clean water for the future.

### How RIOS can help

RIOS is a free and open source software tool that supports the design of cost-effective investments in watershed services. RIOS can help people optimize watershed investments to improve multiple water-related benefits such as sustaining water supplies, maintaining quality, and mitigating flood risks. It can also help direct investments to simultaneously maximize biodiversity or other social goals.

The Natural Capital Project designed RIOS to provide a standardized, science-based approach to watershed management in contexts throughout the world. It combines biophysical, social, and economic data to help users identify the best locations for protection and restoration activities in order to maximize the ecological return on investment, within the bounds of what is socially and politically feasible.

### Generalized tool, flexible approach

RIOS was developed through an extensive stakeholder engagement process, including input from more than 11 water funds (watershed investment programs) across Latin America. The tool has been tested in diverse ecological, social and political contexts. Early tests of the RIOS approach in the Cauca Valley of Colombia resulted in watershed investments up to six times more effective than typical investment approaches. RIOS enables watershed investors to use a replicable, transparent, and stakeholder-driven approach to evaluate projects, making it easier to track the places where their investments are most needed and most effective.

### What are Water Funds?

Water funds are conservation financing mechanisms that gather investments from water users and direct the funding toward the protection and restoration of key lands upstream that filter and regulate water supply. At the same time, water funds enable the preservation of habitat for native plants and wildlife. Water funds vary from place to place depending on local opportunities and regulations. Investors – primarily large businesses and government agencies – see the funds as a smart way to minimize treatment costs and reduce the chance of water shortages in the future.

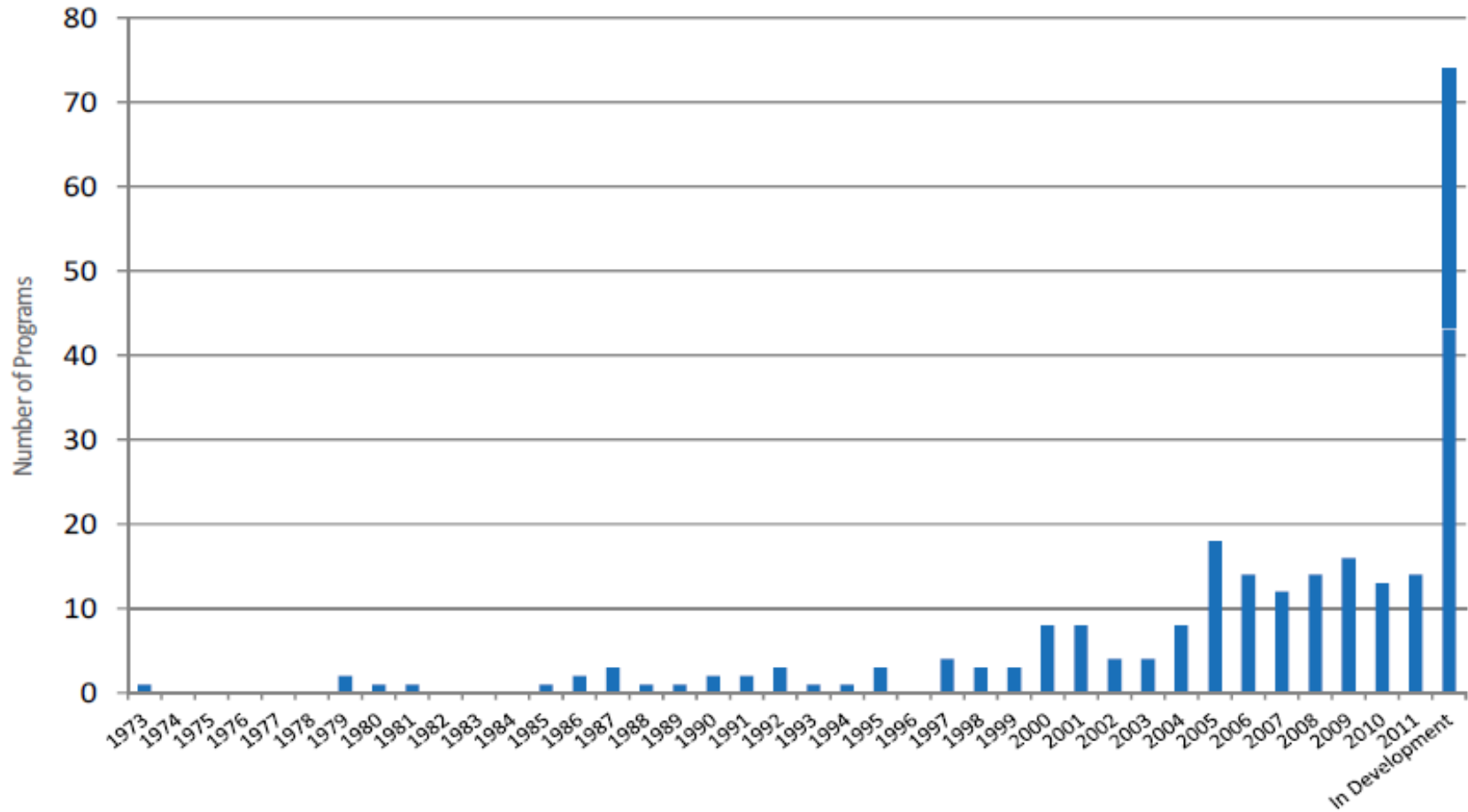


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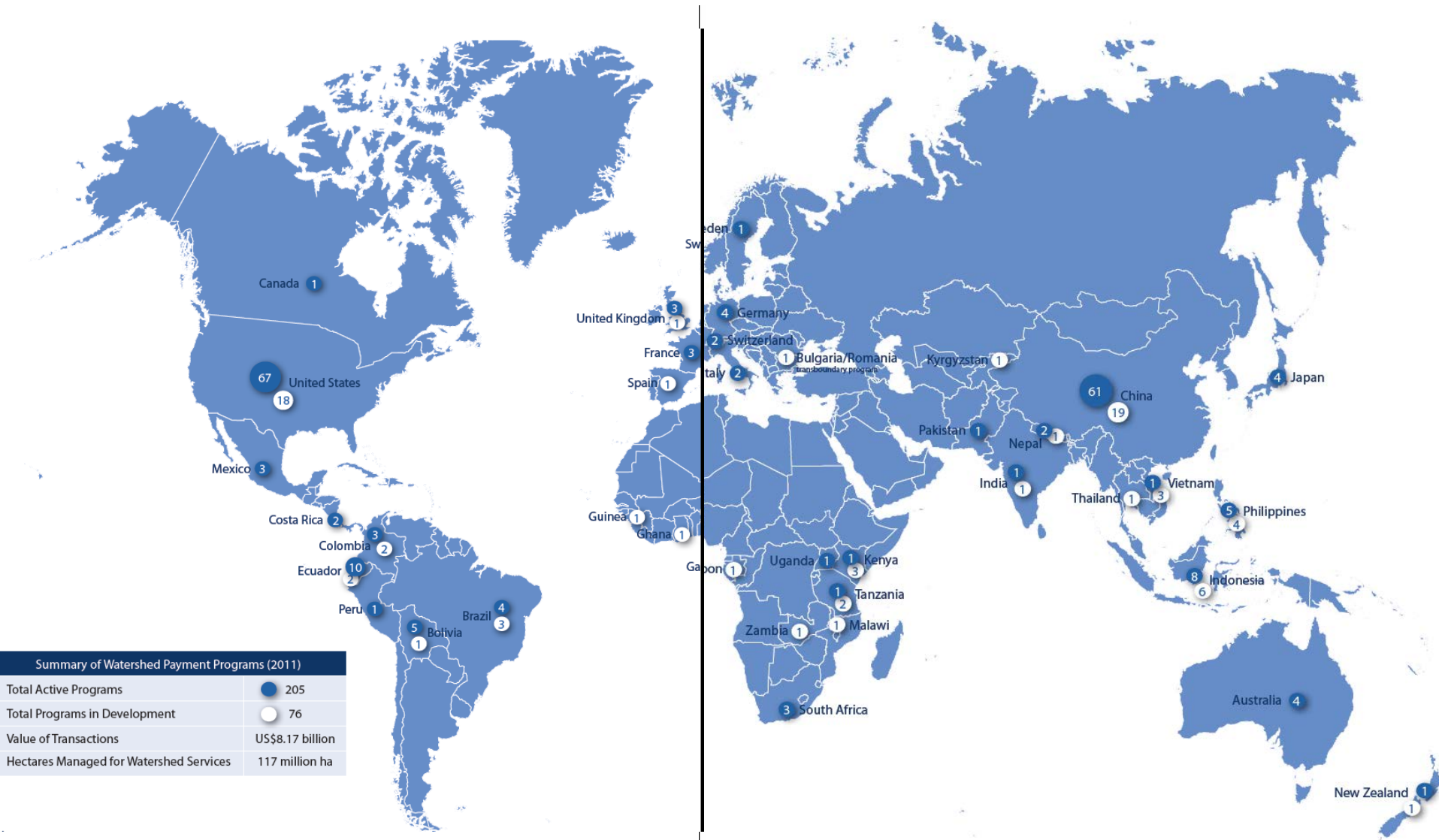


# Over 76 PES watershed programs were in development in 2011

## New watershed investment programs by year



# 205 watershed PES programs were active in 2011, with an estimated value of \$8 billion (USD)





# The Latin America Water Funds Partnership

Water Beam, Sep. 16th 2013

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# **LATIN AMERICAN WATER FUNDS PARTNERSHIP: APPROACH & RESULTS**





# Investing in green infrastructure





# ¿What is a Water Fund?

Water Fund is an **innovative model for long-term conservation**:

- operates through **focused investments in one fund**,
- resources generated or chanalized are assigned to **preserve essential upstream lands** through conservtion actions.



# Water Funds model

**USERS**



**PROVIDERS**



**WATER  
FUND**

**Cities**  
water utilities  
industrial facilities  
inhabitants

**CLEAN  
WATER**

**National Parks**  
Productive  
landsapes  
**Communities**

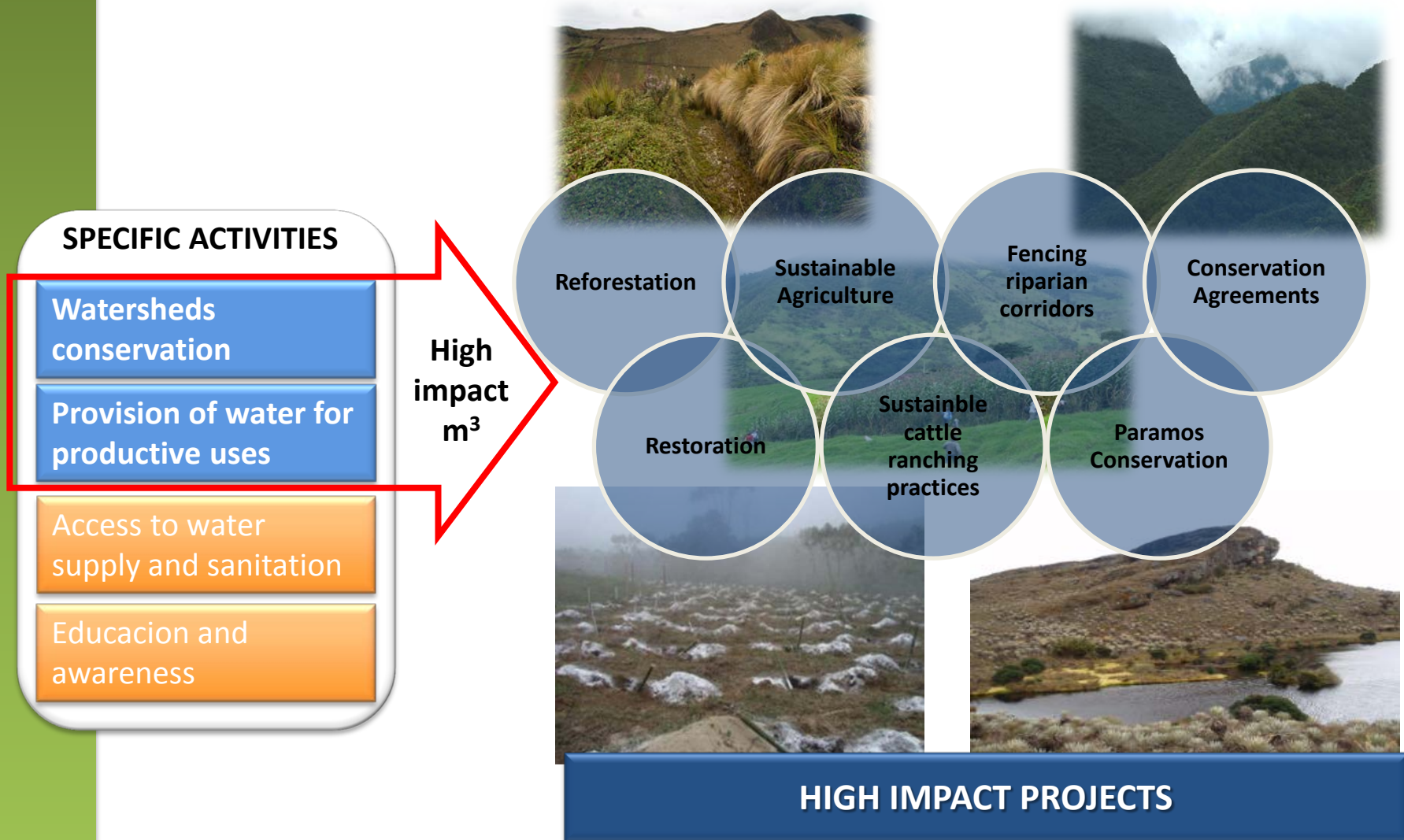
# ¿What are the benefits derived from Water Funds?

Water Funds are designed and implemented based on the **best planning tools & scientific knowledge**. They are:

- **inclusive and transparent**, involving different sectors of society,
- **self-sustaining**,
- **improve water supply** by protecting the watersheds



# Example of activities supported by Water Funds



# The Latin America Water Funds Partnership

The Partnership is a technical and financial support mechanism for the creation and strengthening of Water Funds.

*How the Partnerships works?*

- It supports **local stakeholders** by helping them implement and establish the management structure for each fund,
- It provides **recomendations** and **technical expertise** to strengthen the fund's operation,
- It facilitates the **sharing of experiences** and **best practices** among the Water Funds and other stakeholders.





# The Partnership's goal for 2015

- Leverage **\$27 million dollars** for investment in Water Funds in the region
- Create and strengthen **at least 32 Water Funds** in Latin America
- Have a positive impact on as many as **3 million hectares** of natural ecosystems
- Potentially benefit as many as **50 million people** who receive their water supply from the watersheds where the Water Funds operate

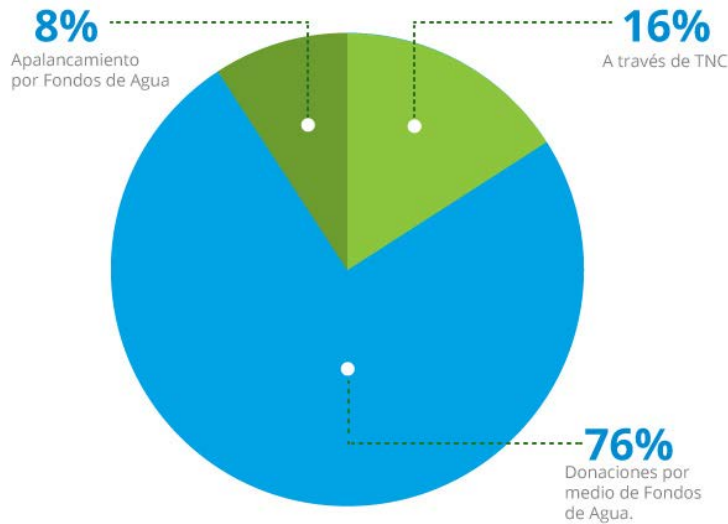


# The Partnership's added value

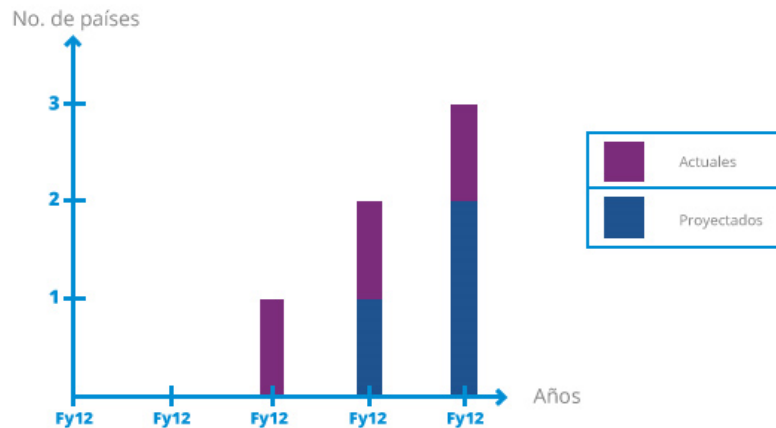
- Biodiversity conservation
- Raising of public awareness
- Joint work by representatives of the public and private sectors and civil society
- Long-term integrated watershed management
- Maintain or improve of water quality and quantity for cities and local communities
- Improve or maintain human well-being and quality of life for upstream communities

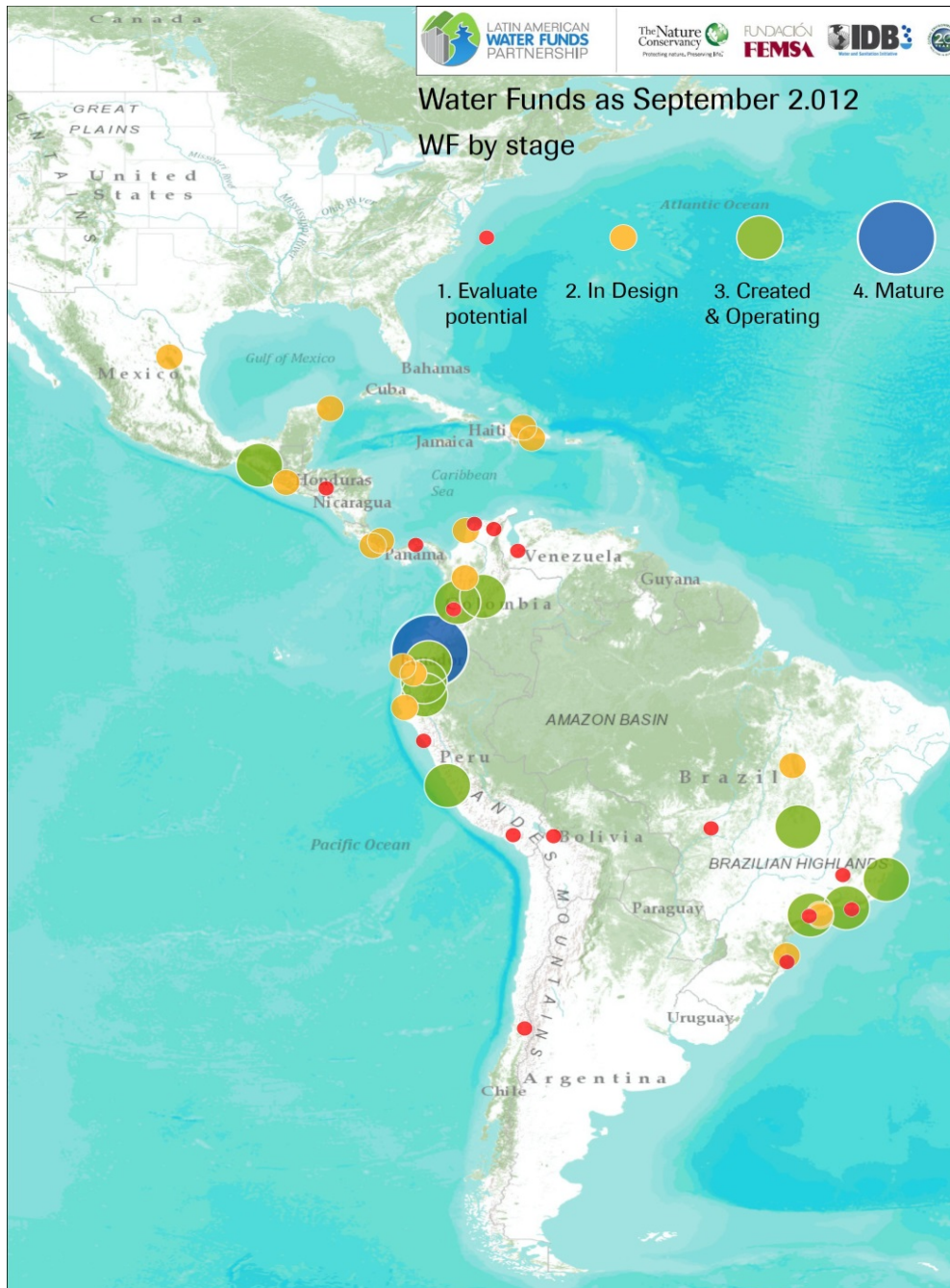


# Partnership's impacts



- 15 Water Funds created
- 1,4 m has watersheds impacted
- 11,8 m has area covered
- 130.000 has Public Protected Areas
- 83.200 has of Private Reserves





# Water Funds in LAC







**More info:**

**[www.fondosdeagua.org](http://www.fondosdeagua.org)**

**Coming soon:**



## Video: Conserving watersheds in Colombia

<http://www.youtube.com/watch?v=-z6rjClC1CY>

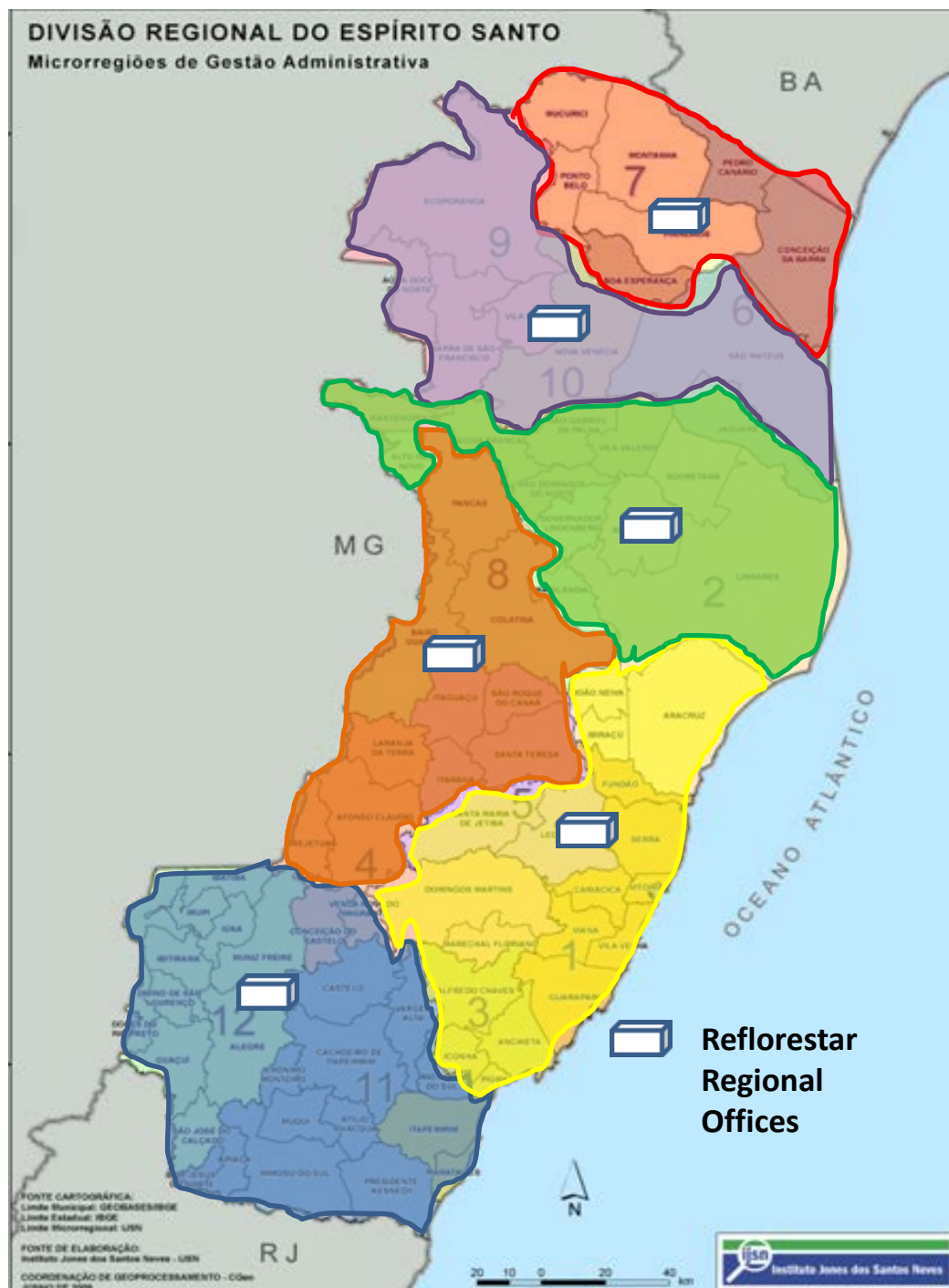


# **ESPIRITO SANTO, BRAZIL**



## TNC Main Actions:

- 1) Development of “Reflorestar Gateway” in order to optimize Reflorestar Program management
- 1) Development of Conceptual Model for Reflorestar Regional Offices
- 2) Support to State Environmental Rural Registry Management System (integrated to Reflorestar Gateway)
- 1) Support to Doce Watershed Committee for “Produtor de Água” Program implementation (component of Watershed Committee Investments Plan)



**PIURA, PERU**





# Mainstreaming Sanitation in Watershed Management in Peru

An innovative mechanism

Zinnia Ibañez –SECO

Juan José Rodríguez – TNC

Gustavo Perochena - WSP





# Water funds: Main features and benefits

- Long-term institutional & financial sustainability
- Integrated watershed management: positive impacts
- Adaptation strategies to climate change
- Compensation schemes for ecosystem services
- **Sanitation**
- Transparency and monitoring



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**Better water supply = healthy populations**

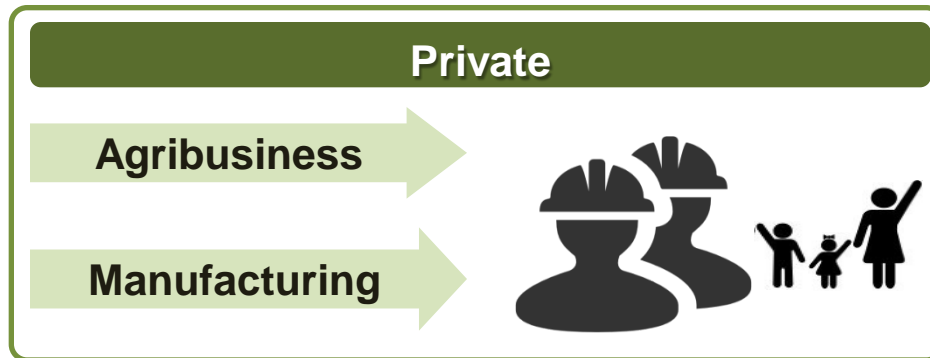
# Value added of Sanitation

- Address one of the recurrent sources of contamination of hydrological resources.
- Support control, mitigation and treatment mechanisms.
- Facilitate access of rural and peri-urban families to basic services (water connection, toilet, shower, etc.)
- Local governments can promote improved rural and peri-urban sanitation, partnering with private sector.
- Local actors access funding for behavior change, improving nutrition levels in children and family health.

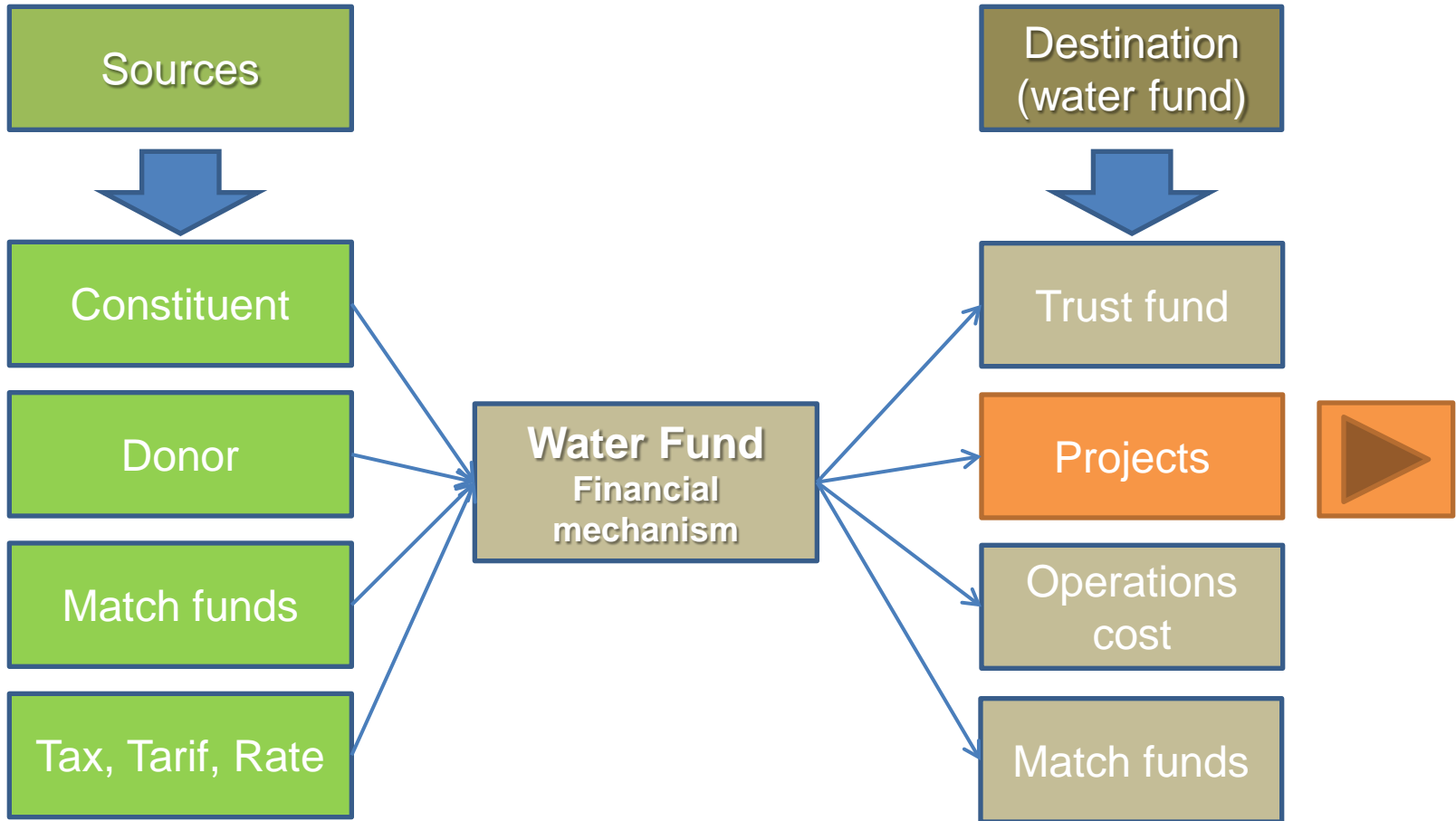


# FORASAN FUND

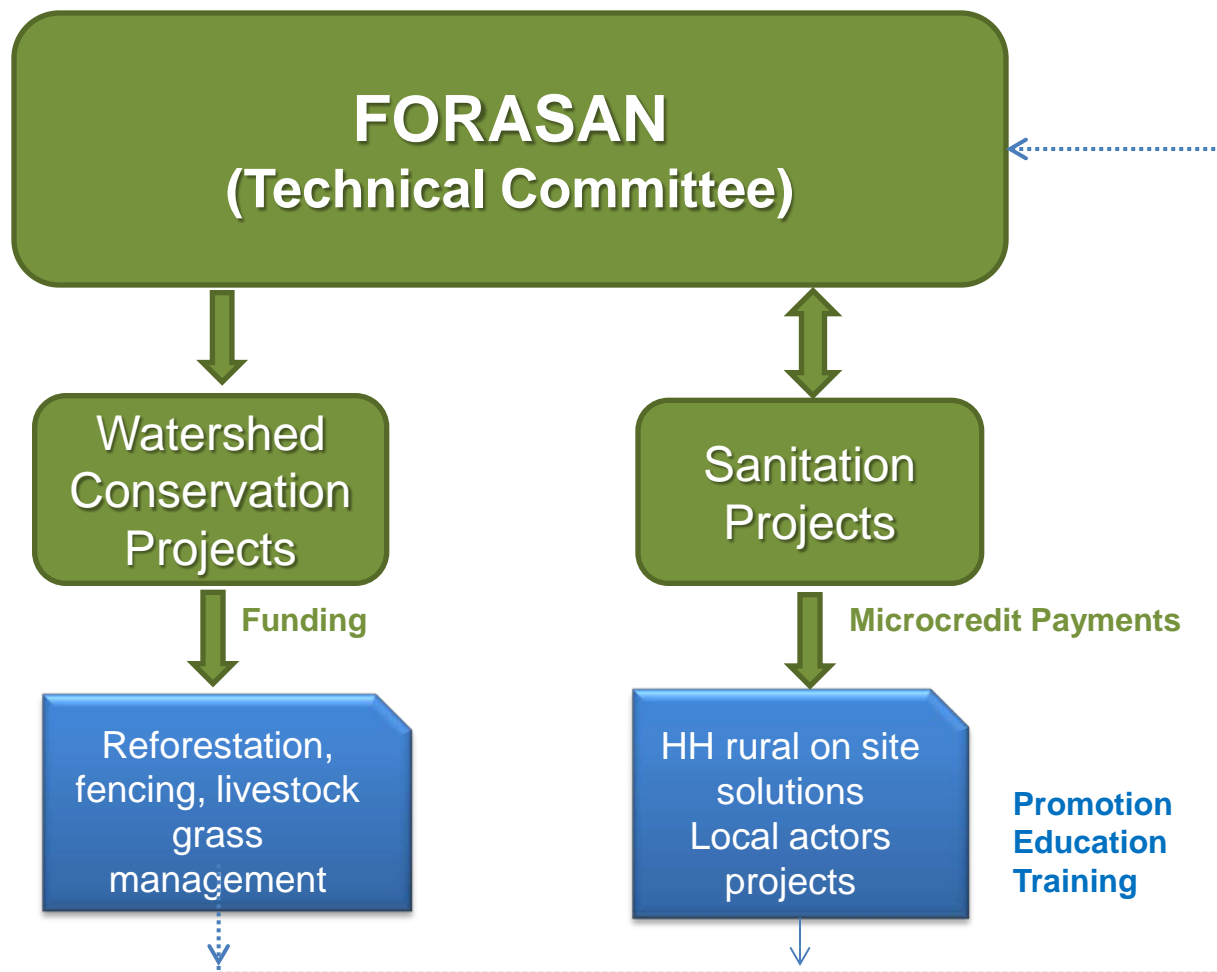
- Chira: Polluted basin (human excreta is the second source of contamination, about 50% of children does open defecation in Piura)
- Watershed Management Plan almost ready but lacks enough financial sources to support its activities
- Sanitation fund is a potential financial source for the WMP
- Integrated to Development Plans



# FRAMEWORK



# A probable scheme of W&S Component in Piura Fund



# Partners, next steps

- Meeting with RG of Piura to present final WMP (end of October)
- Seed capital + W&S Plan
- Studies: Institutional / Legal / Financial / Technical design
- Rural W&S Program
- Capitalize the fund



BANCO MUNDIAL



# ENABLING ENVIRONMENT

(supply and demand side)

Increasing  
interest from  
subnational  
governments



**EPS GRAU**

Microcredits

Capitalize FORASAN



## New Law 30045 MODERNIZATION OF SANITATION SERVICES



PERÚ

Ministerio  
de Vivienda, Construcción  
y Saneamiento



PERÚ

Ministerio  
de Agricultura

[www.worldbank.org/water](http://www.worldbank.org/water)

[blogs.worldbank.org/water](http://blogs.worldbank.org/water)

[www.wsp.org](http://www.wsp.org)

[@wspworldbank](https://twitter.com/wspworldbank)

**GRACIAS!**



**wsp**  
water and  
sanitation program



# **AFRICA: THE CASE OF NAIROBI**



# Upper Tana-Nairobi Water Fund



*Courtesy Ian Murphy*



# Degradation Issues in Watershed



Poor water drainage



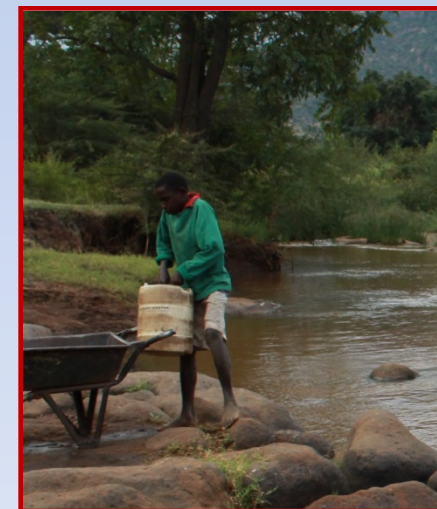
Sediment filled water intake



Inadequate practices on steep farmlands



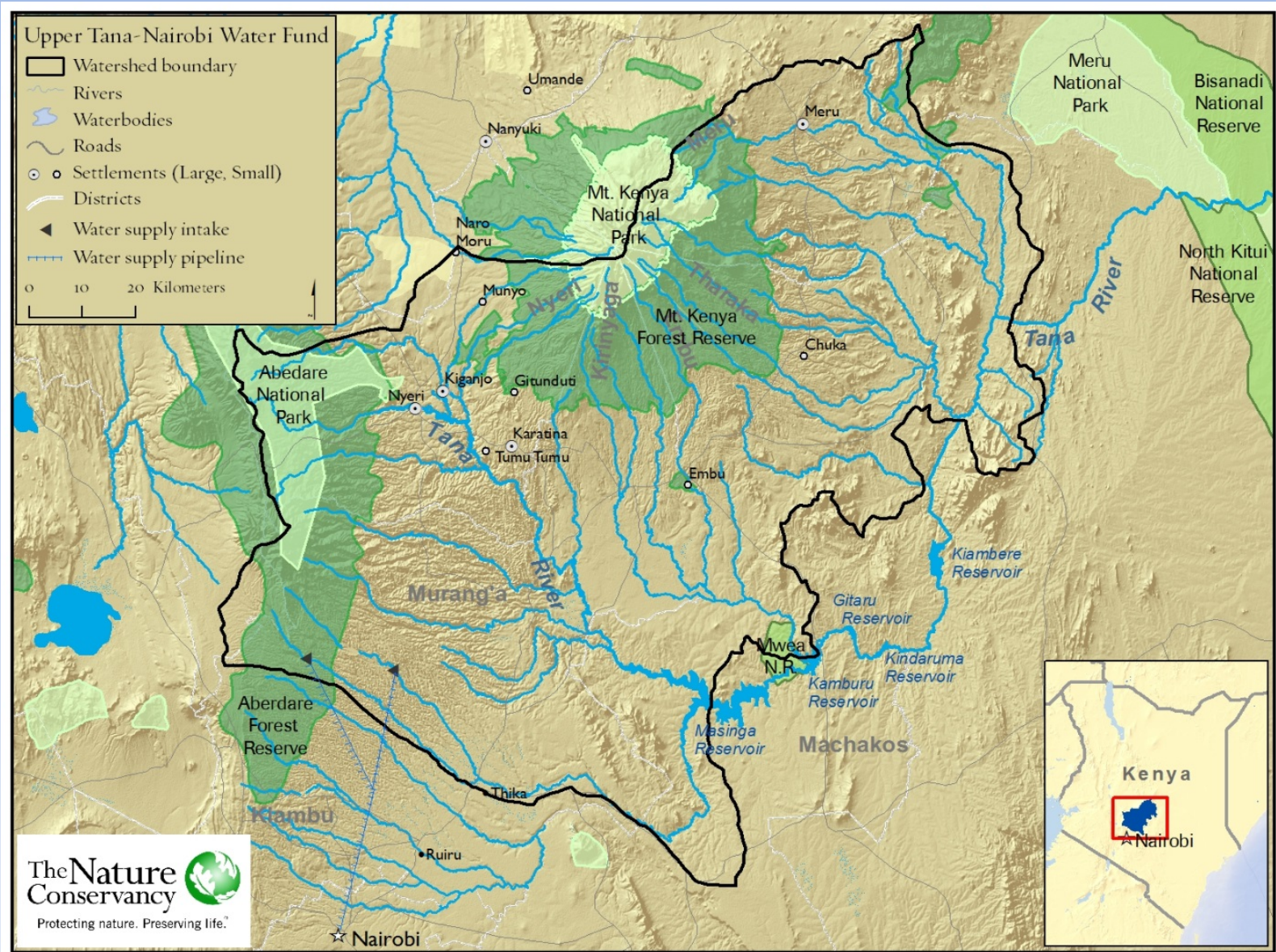
Road construction & maintenance



Lack of adequate dry season water access

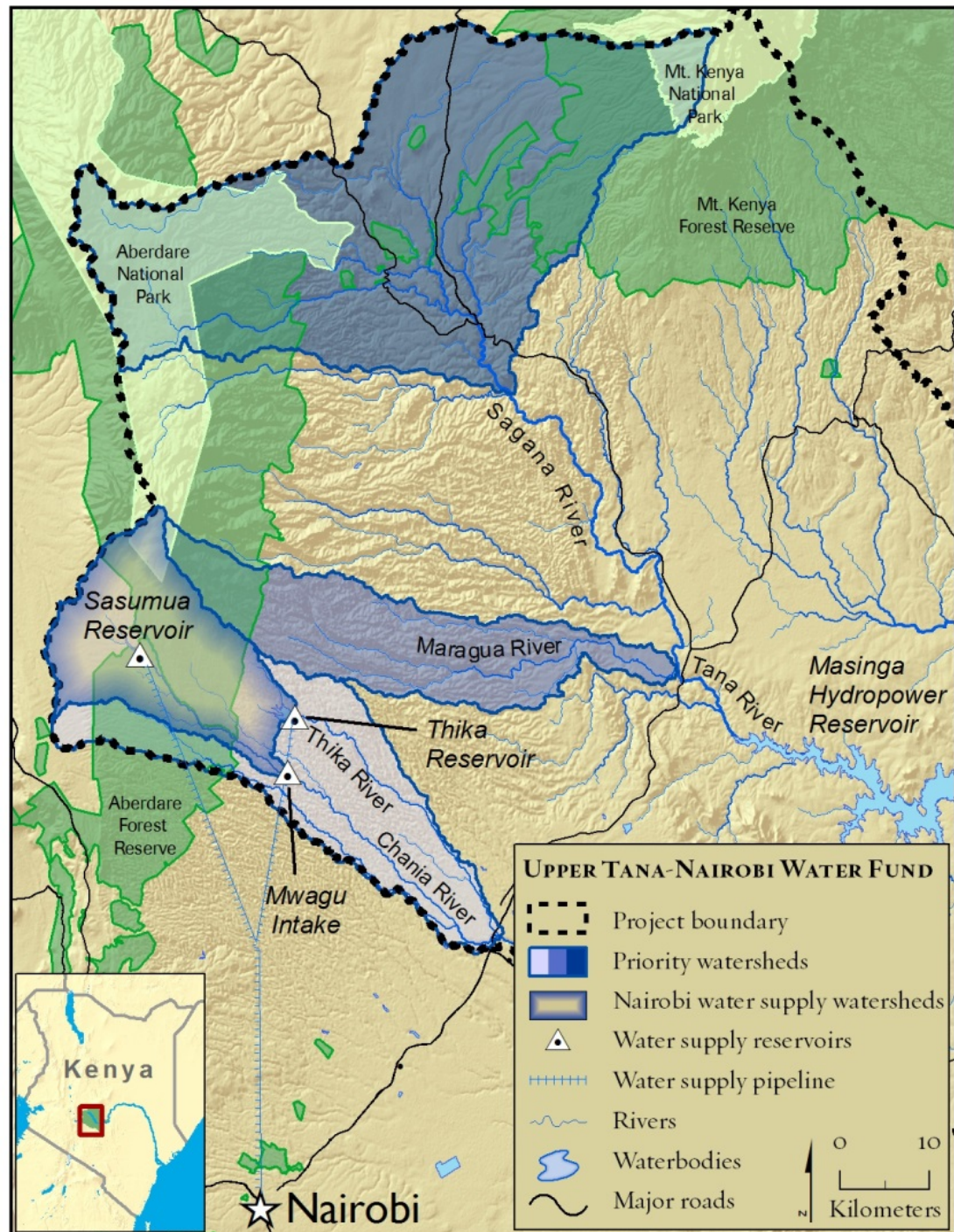


# The Upper Tana Watershed, Kenya





# Priority Watersheds



# Vision for the Watershed

A well conserved Upper Tana watershed that provides the quantity and quality of water needed for Nairobi's city water supply and hydropower generation for Kenya's economy, while supporting people's livelihoods.





# Broad Water Fund Goals

- Develop a sustainable financing mechanism for conservation
- Increase ecosystem integrity
- Safeguard livelihoods of local farming communities
- Demonstrate the benefits of green infrastructure
- Water quality improvements in priority rivers
- Increase dry season baseflows in priority rivers
- Facilitate gray infrastructure improvement, demonstrate green infrastructure value



# Nairobi-Upper Tana Water Fund Milestones

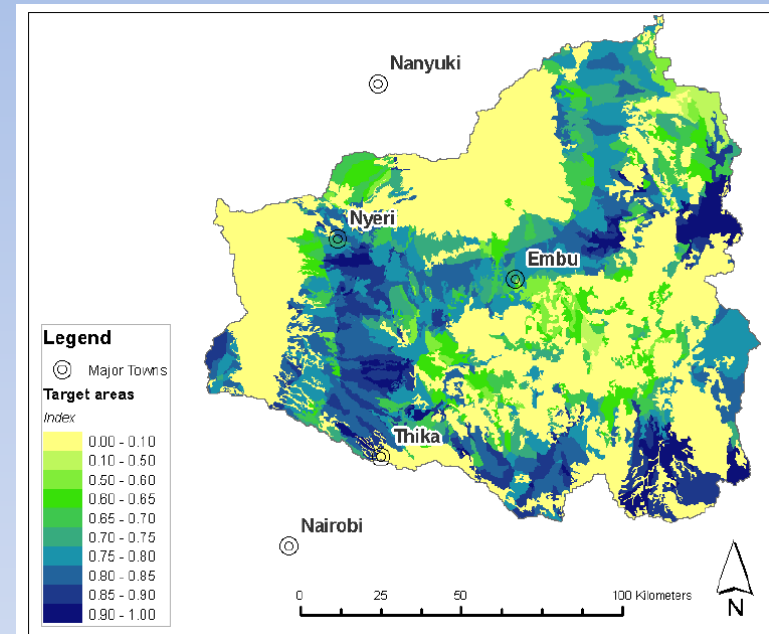
- Hired Water Fund Manager
- Completed Technical Feasibility Study, selected focal watersheds
- Signed MOUs with key partners: Nairobi Water, KenGen, TARDA, WRMA, CIAT
- Formed Water Fund Steering Committee with MOU signatories + Coca-Cola, UN, and EABL/Diageo
- Raised UNDP-GEF and other funding to partner with local NGOs for pilot project implementation
- Water user and Kenyan government agency funding pledges being received
- Local support for establishment and participation in governance and endowment Fund creation



Nairobi Water Fund Steering Committee members mark World Water Day

# Next Steps- Design

- Implement pilot projects
- Further development of partnerships
- Select a governance model
- Conduct Return on Investment Analysis
- Facilitate green-gray water approach for water security
- Establish an environmental and socio-economic monitoring program



# Next Steps- Implementation

- Establish the Water Fund institution
- Begin full Water Fund implementation
- Raise \$1.6M in operating funds
- Establish a \$15M+ endowment
- Scope areas for replication





**Thank You!!!**

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**Thank You!!!**

