



Utility Business Cases for Investing in Watersheds

Veolia | The Nature Conservancy

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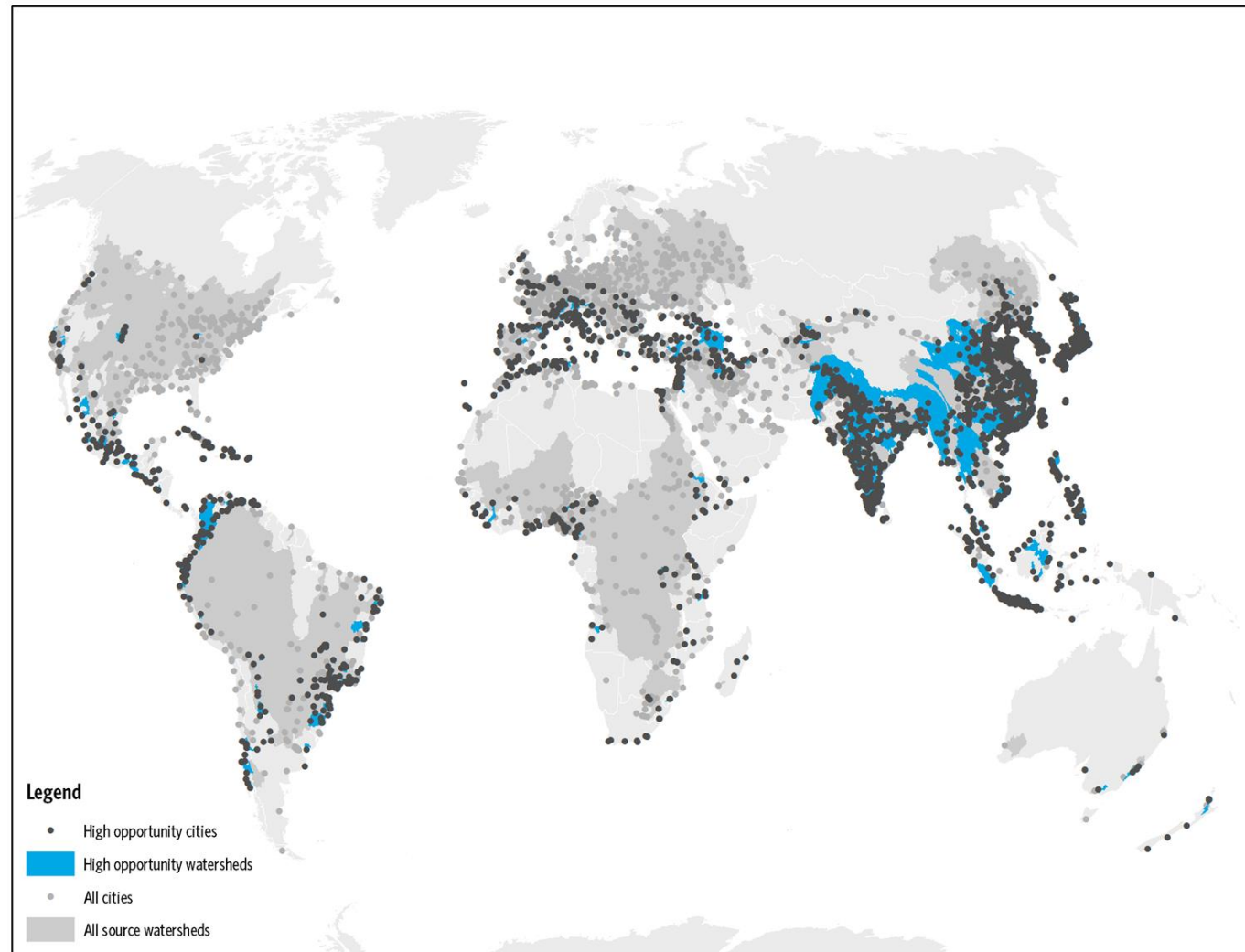


Introduction

Andrea Erickson-Quiroz, The Nature Conservancy

High opportunity for water treatment savings

- Cities with favorable water treatment ROI and the source watersheds for these cities
- Shown are cities with ROI > 0.1
- ROI calculated as estimated opex + capex savings relative to conservation costs for a 10% pollution reduction





Panel Presentations

- **Jean-Paul Colin,**
Lyon Metropole, FR
- **Philip Gichuki,**
Upper Tana -Nairobi
Water Fund Trust,
KY
- **Benoît Ringot,**
Aguascalientes, MX
- **Bart Schoonbaert,**
OFWAT, UK

Nexus approach to water supply and biodiversity in Lyon



Stockholm, August 28, 2018

Outline

1. Greater Lyon water supply
2. The 20 years well-field
“project”
3. Green Infrastructures
benefits?
4. Conclusions



Jean-Paul Colin

GRANDLYON
la métropole



Thierry Roques

equ
DUGRANDLYON

Greater Lyon Water Cycle management

Grand Lyon

- 1,300,000 inhabitants
- 59 municipalities
- Main missions:
 - Economic development
 - Education, culture
 - Solidarity
 - Living environment incl. Water supply and Sanitation

Water supply:

- wells in the Rhone river alluvial aquifer
- average production 250,000 m³/d
- 180,000 connections

Sanitation: Mix of 12 wastewater treatment plants and decentralized systems

Greater Lyon Water Cycle management

Water supply

Grand Lyon

- ownership, strategy,
- financing, capital works,
- and price setting
- Tendering and control of operator

Operations awarded after competition to “Eau du Grand Lyon” (Veolia group)

Well Field

- **375 hectares of land - 112 wells**
- **1995: *classified as a nature reserve* for the Grand Lyon**
- **Outstanding observatory of flora and fauna**
- **Reforestation and replenishment program entrusted to the National Office of Forests**

The 20 Years well-field 'project' in a snapshot

Context

- Natural recharge area
- Also a natural biodiversity habitat
- Flood-prone area - ut cannot be fenced
- Specific attention to address hazards.



Goals

- Conservation of the alluvial forest
- Restoration of the dry meadow and bush Conservation
- Biodiversity monitoring & invasive species control



Tools

- **Wells and ponds area:** water supply duties & aquifer recharge (pollution barrier)
- **Landscaped natural management area:** meadows and ponds
- **Forest without intervention**
- 5 permanent staff for wardenning, clearing etc

Ecosystem protection and monitoring results

Fauna

- The site hosts sensitive heritage species, e.g. the forest cat, beaver and otter
- also a migration corridor and a reproduction site.
- Black kite population plateaued ca. 2004 - 2009 then limited by the increasing density of the forest (same for Grey heron)

Flora

- Despite its relatively modest surface area (3.75 Km²), the site hosts 32% of the flora of the Greater Lyon area, (533 km²).
- 24 orchids species represent 50% of those found in the department (turnover observed)

Green infrastructures potential benefits **GENERIC**

Regulation services:

- Quality (pollution) & quantity
- Climate change Adaptation & CO2 sequestration,
- Floods & rainwater control

Cultural services:

- Well-being & health benefits
- Hobby & education



Support ecological functions:

- Biodiversity/ species protection
- Ecological corridor and connectivity

Economic impacts :

- Attractiveness
- real-estate value
- green jobs, tourism..

Green infrastructures **actual** benefits **HERE**



Regulation services: ✓

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Economic impacts :



Avoided Production costs

	Theoretical	Actual
Capacity	1,000,000 m ³ /d	1,000,000 m ³ /d
	Typical Coag. Filter etc.	well-fields
CAPEX	500-700 €/m ³ /d	376 €/m ³ /d
CAPEX annualized	38-52-Mn€/year	28 Mn€/year
OPEX	0.15-0.25 €/m ³	0.04 €/m ³
OPEX annualized	14-22 Mn€/year	3.5 Mn€/year
TOTEX annualized	52-74 Mn€/year	32 Mn€/year

Provisional conclusions

What does work

- The co-evolution of the 3 zones with respective management targets shows that
- Biodiversity enhancement and water supply management are compatible at the heart of the urban environment

What we learned

- Close attention required, and adaptive goals and means
- Invasive species control? measurable role in biodiversity corridors?
- There is no 'pristine' zone within a densely populated area

Broader perspective

- Financial analysis warrants the investment in this green infrastructure
- Land ownership is key - not an issue here (despite Developers requests and thanks to continued commitment of elected officials)
- Wider benefits ex-post warrant the project

Nexus approach to water supply and biodiversity in Lyon



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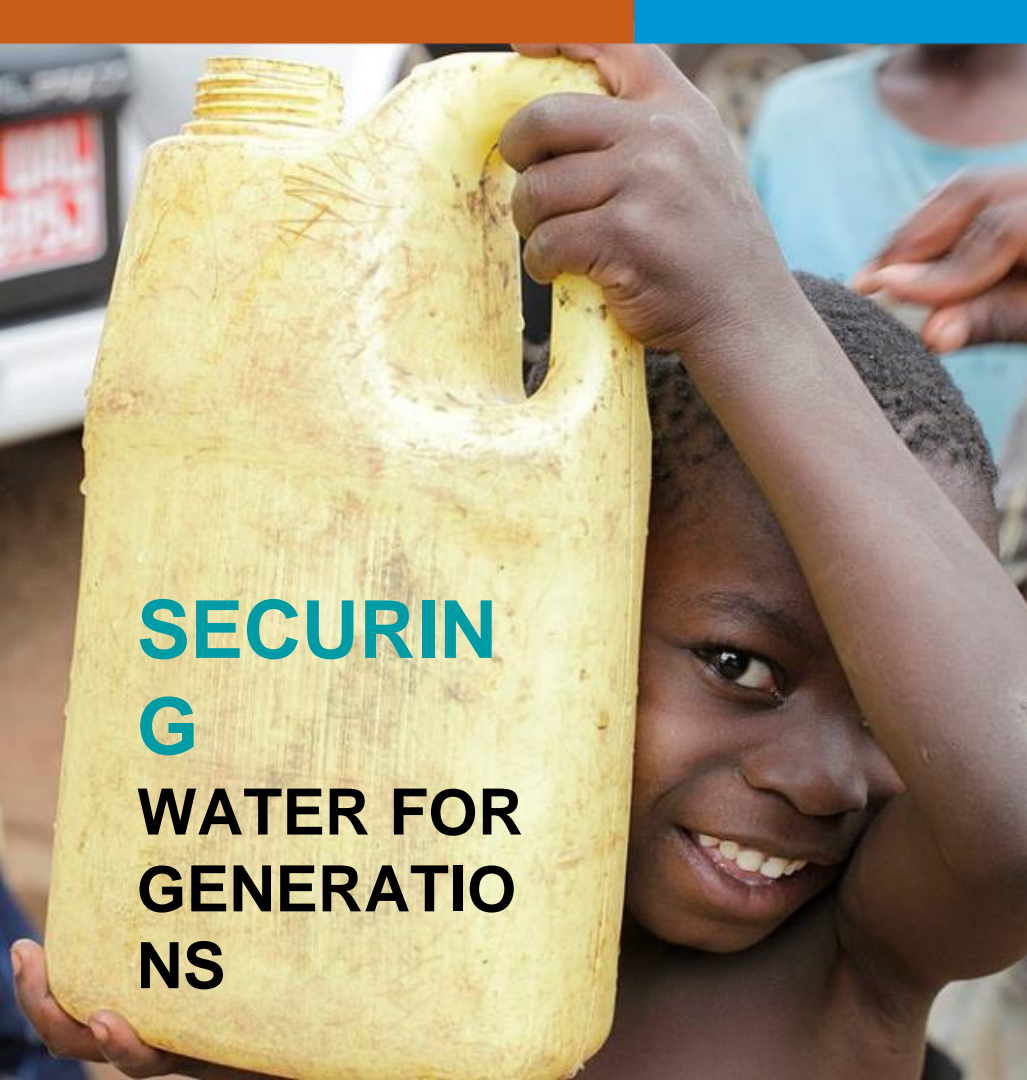
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**SECURIN
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NS**

**UTILITY BUSINESS CASES FOR INVESTING IN
WATERSHEDS**

**A case of Upper Tana -Nairobi Water
Fund Trust**

Presentation by

**ENG PHILIP GICHUKI, NAIROBI WATER FUND
CHAIRMAN**

Key Issues facing Upper Tana Water Shed

- Forests on steep hillsides converted to agriculture.
 - Soils are washed down
 - Land productivity reduced
- During wet period Water Utilities' treatment facilities are choked with sediment
- In dry seasons water treatment facilities are affected by low river flows
- Capacity of Hydro power reservoirs is reduced



GLOBAL TO LOCAL

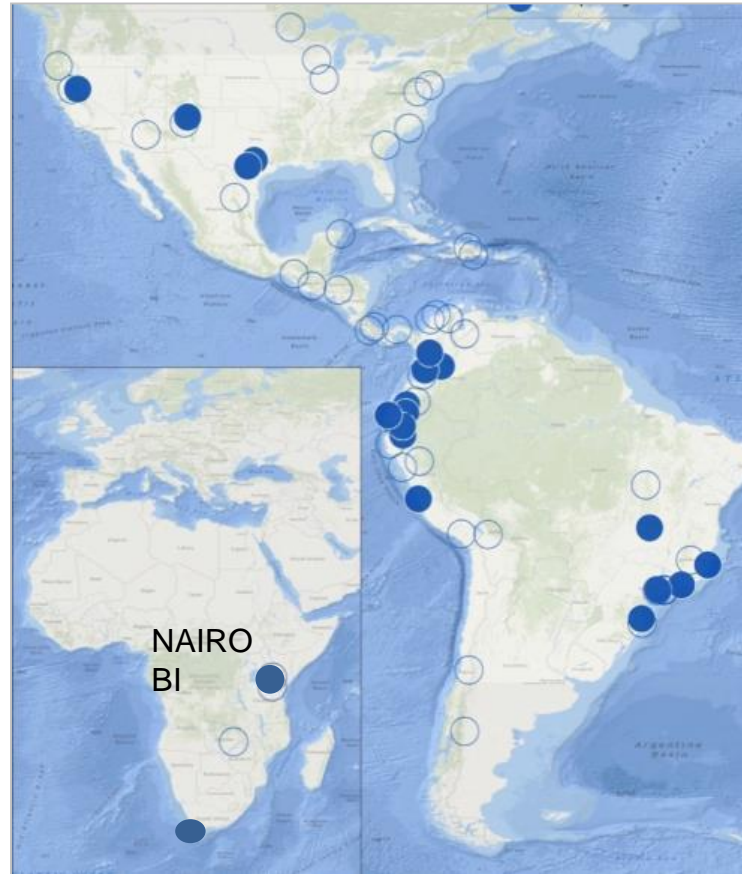
35+ Water Funds Globally

60 Years of Freshwater Success

210 Water Fund Experts, **40** in Africa

Global Securing Water Network
Science, Finance, Governance, Policy

Trusted Convener
Communities, Business, Government



● Operating¹

○ In Design

Upper Tana – Nairobi Water Funds Partners



A PPP Model replicable across Africa



Interventions and Impacts

Water Storage

18,000 water pans developed by local farmers

River Riparian Protection

1,000 farmers preserve river riparian

Water Use Efficiency Improvement

Drip irrigation promotion and aims to reach 3000 farmers by 2020

Promotion of fruits

100,000 high value avocado

Enhancing extension services

25,000 Farmers being assisted with training

18,000 Farmers are on a mobile phone platform

Delivering Global Standards

Farmers work together under RFA

- Easing Kenya's power supply challenges
- Cleaning rivers now a major priority

Time to act

- One major coffee marketing cooperative
- 8 coffee processing factories
- 8,500 coffee farms conserved
- 21,500 acres jointly conserved
- 80km of river riparian protected
- 40% rise in yield to 2million kilos of cherry

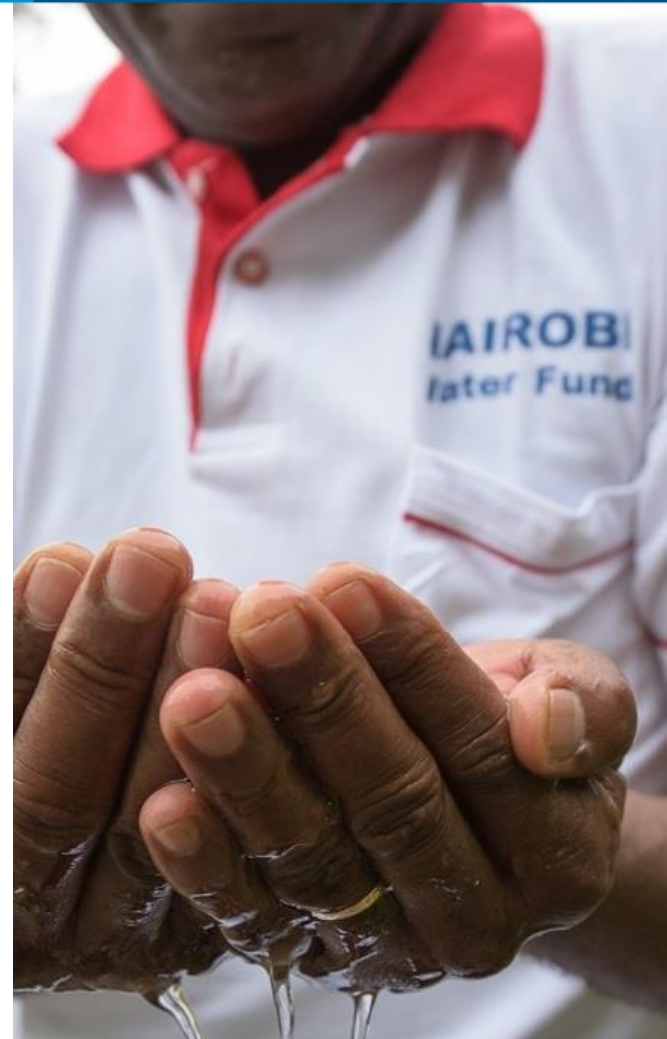


RFA certificate awarded in recognition of **Rumukia Coffee Cooperative** work done in partnership with their marketing agencies namely: **Coffee Management Systems (CMS), Sustainable Management Services (SMS), Sasini Ltd and Kenya Cooperative Coffee Exporters (KCCE)**

Supported by



Water is life!





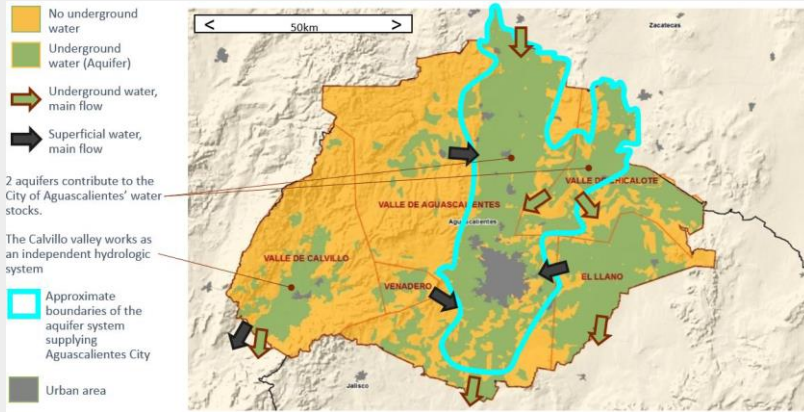
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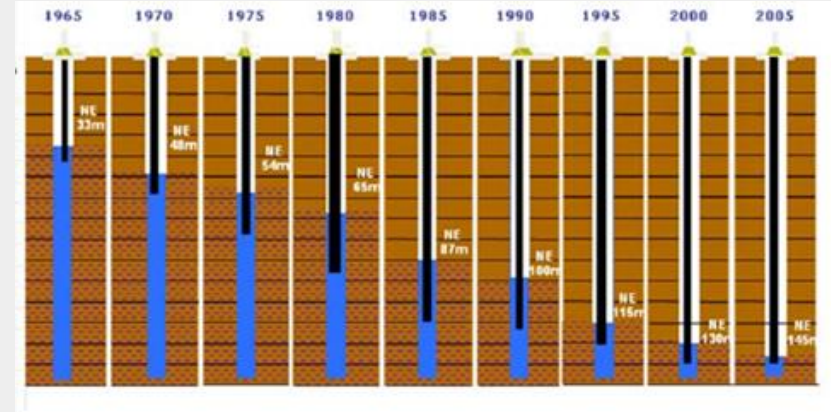
Aguascalientes Waterfund Project

August 28st, Stockholm (SIWI)

A growing metropolitan area in a resource-stressed landscape



UNDERGROUND WATER RESOURCES OF THE STATE OF AGUASCALIENTES, SHOWING THE AQUIFERS SUPPLYING AGUASCALIENTES CITY (Livelihoods adaptation FROM PRO-NATURA AND TNC, 2017)



AGUASCALIENTES AQUIFER LEVEL EVOLUTION SINCE 1965 (PMA Mexico 2007)

If we consider the estimated actual groundwater withdrawals (and not the authorized volumes), **280.6 Mm³/year (= 32 010 m³/h)** need to be saved

How to build the Water fund?

1. Assess what needs to be done

Scientific study done in 2017 to better understand the situation and actions to be done

1. Looking for fundings and building the structure/governance

- a. Publics
- b. Private

1. Launch a concrete field action = Livelihoods project to demonstrate

97 farmers on a target of 250 farmers (6 years program)

Co-financed by Veolia, Danone SEDRAE, CONAGUA, FIRA



1. Meanwhile, still push scientific collaborations with universities

- a. Universidad Autónoma de Aguascalientes.
- b. Universidad Politécnica de Aguascalientes.
- c. CIDE : Centro de Investigación y Docencia Económicas.



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An exciting, varied and growing landscape of solutions

A wide range of catchment management and nature-based solutions...

Including:

Wetland restoration for quantity & quality



Natural water treatment processes to reduce ammonium & phosphorus levels

Planting trees for natural flood management



Online auction trading platform to reduce nitrate run-off

Farmer advisory services to reduce metaldehyde use

...with a wide range of characteristics

Type

- Non-market or market-based
- Behavioural or non-behavioural
- Direct action – advisory – financial

Focus

- Water: quantity (supply/drought & flood) - quality
- Wider environmental benefits

Location

- Upstream to downstream
- Input and output of treatment works

Setup

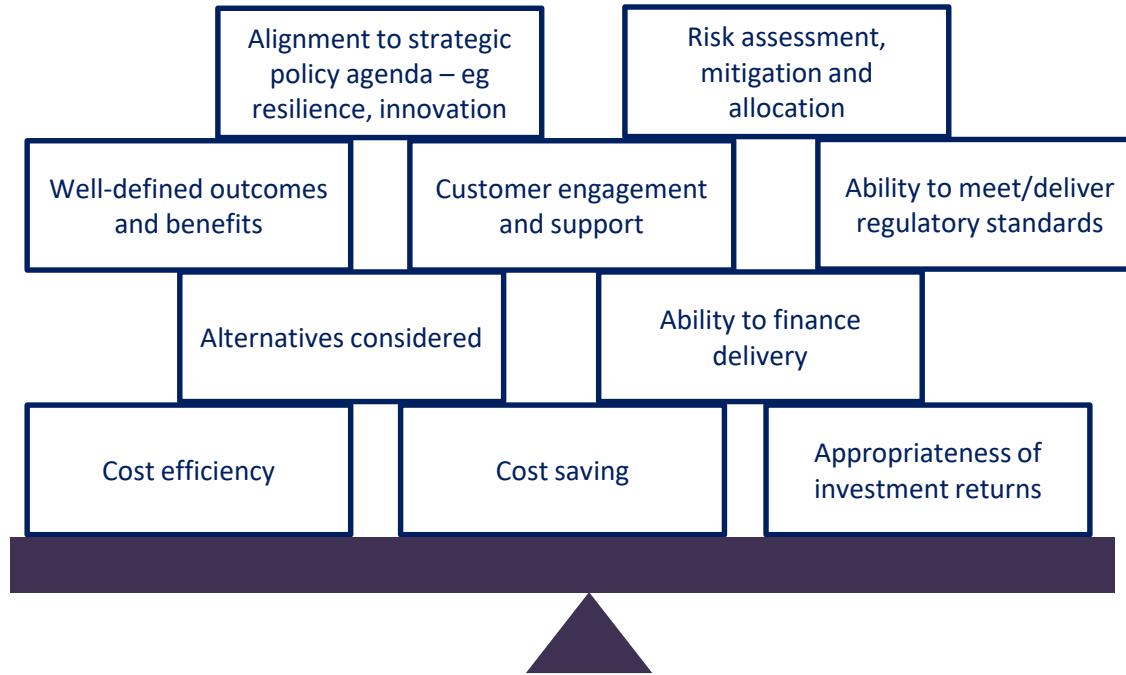
- No, single or multiple partners
- Land owned or leased (where relevant)
- Single or multiple funding sources

Business case requirements will depend on context

Water utilities across the globe operate within very different regulatory/governance frameworks and industry structures.

Regulatory submissions or investment business cases will have different requirements depending on the local context.

A submission or business case may need to include evidence of:



Every barrier has its solution

Some potential barriers or sources of resistance...

- Lack of delivery or performance control – increased (perception of) risk
- Reliance/dependency on non-traditional (delivery) partners

- Tendency to focus on outputs and operational performance
- Tendency to focus on narrow/single benefits
- (Perception of) negative financing/return impacts

- Institutionalised preference for -- or familiarity with -- traditional engineering solutions
- Misalignment with existing workforce skillset eg. strategy or engineering skills

Operations & delivery

Strategy & finance

Culture

..and some solutions

- Clear accountability and governance arrangements
- Transparency about risks and challenges
- Appropriate risk-sharing / risk-allocation mechanisms
- Scale matched with trust

- Understanding of / alignment with wider policy frameworks and narratives
- Clear identification and articulation of (co-)benefits
- Removal of (potential) 'capex bias' incentives
- Applicability of new types/sources of finance (eg green bonds)
- Opportunity to co-fund with partners

- Awareness of organisational and reputational benefits; eg attractive employer, responsible corporate citizenship, innovative business
- Access to expertise, networks and knowledge-sharing platforms

Utilities, policy makers and regulators all have a role to play in removing barriers

Regulation as an enabler

-
- Focus on outcomes
 - Avoid prescribing the solution
 - Consider and align the incentives
 - Allow and enable markets where appropriate
 - Allocate risk appropriately
 - Actively remove barriers
 - Acknowledge competing objectives – and work through them

The right side of history

- ✓ Policy, regulatory and financial frameworks are aligning -- and are increasingly favourable
- ✓ Part of the solution to major local and global challenges
- ✓ Unprecedented convergence of environmental, economic, and social benefits



Positive utility
business case for
catchment
management solutions

With the potential and the opportunity to **fundamentally (re-)shape** the role of water utilities

Open Panel

Moderated by Eric Lesueur, Veolia

Questions:

1. What are the challenges to developing business case studies for watershed conservation?
2. What factors other than a business case unlock investment?
3. Can nature based solutions attract new sources of capital?
4. How to recognize land as an asset class in water utility budgeting?

Thank You

