ICLEI
Local Governments for Sustainability

WORLD WATER COUNCIL

WEBINAR SERIES

CitiesWithWater

TOO LITTLE

WEBINAR SERIES CitiesWithWater TOO LITTLE

Facilitator

Mr Anton Earle

Global Coordinator: Water Systems

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Local Governments for Sustainability

ICLEI'S REACH

ICLEI – Local Governments for Sustainability is a global network.

We have put 'urban' firmly on the sustainability agenda, working with and effectively advocating for local and subnational governments in the global arena for

30+ years

Working with

2500+

local & regional governments

Active in

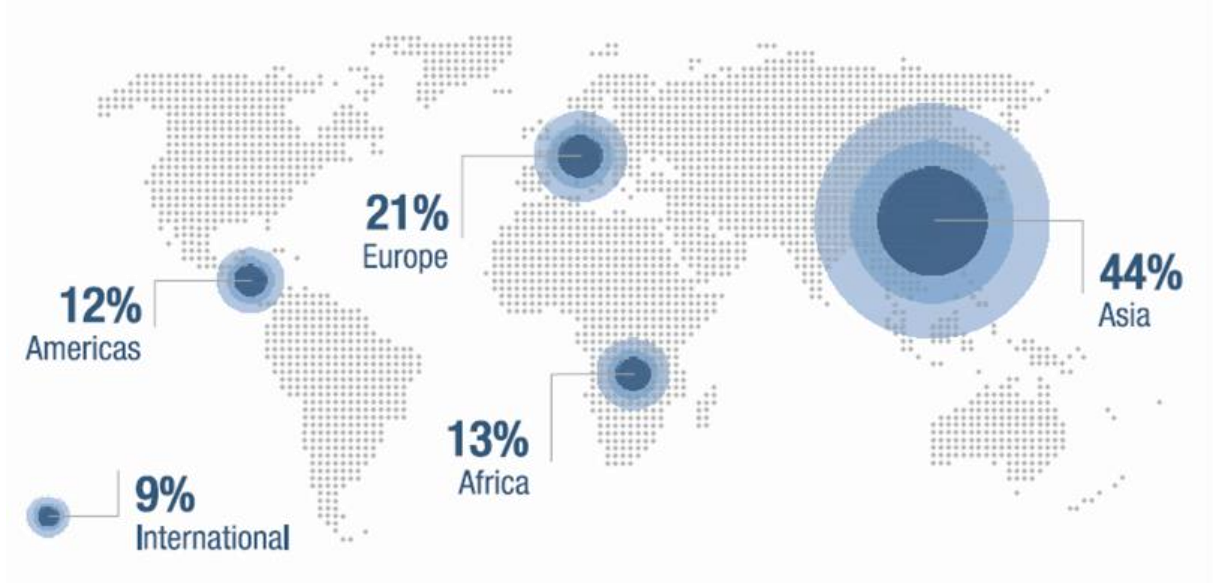
125+

countries

Together we make water a political priority for all.

WORLD WATER COUNCIL

250+ members accross **50+** countries



An International Multi-Stakeholders Platform Organization

Created in 1996 to :

- **Promote political action, advocacy and hydrodiplomacy**
- **Bring together every stakeholders to enhance new innovative solutions to protect water**
- **Organize every three years the World Water Forum,** gathering more than 20 000 persons

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Water:
Too little, too much or too dirty...

(Prof Kader Asmal – Minister of Water in South Africa 1994-1999)

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ICLEI Global Urban Water Resilience Programme Framework

The ICLEI framework aims to address the interconnected challenges of water management in urban areas by focusing on three main areas: **Values, Connections** and **Investments.**

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Urban Water Resilience

Values

Human Right to Water and Sanitation

Ecosystem Health and Resilience

Value of Water

+

Connections

Urban-Catchment Links

Ecosystem Connectivity

Stakeholder Participation and Engagement

Inter-sectoral Collaboration

+

Investments

Infrastructure Development

Nature Based Solutions

Project Preparation

Knowledge, Institutions and Capacity

ICLEI & WWC Series of webinars 2025

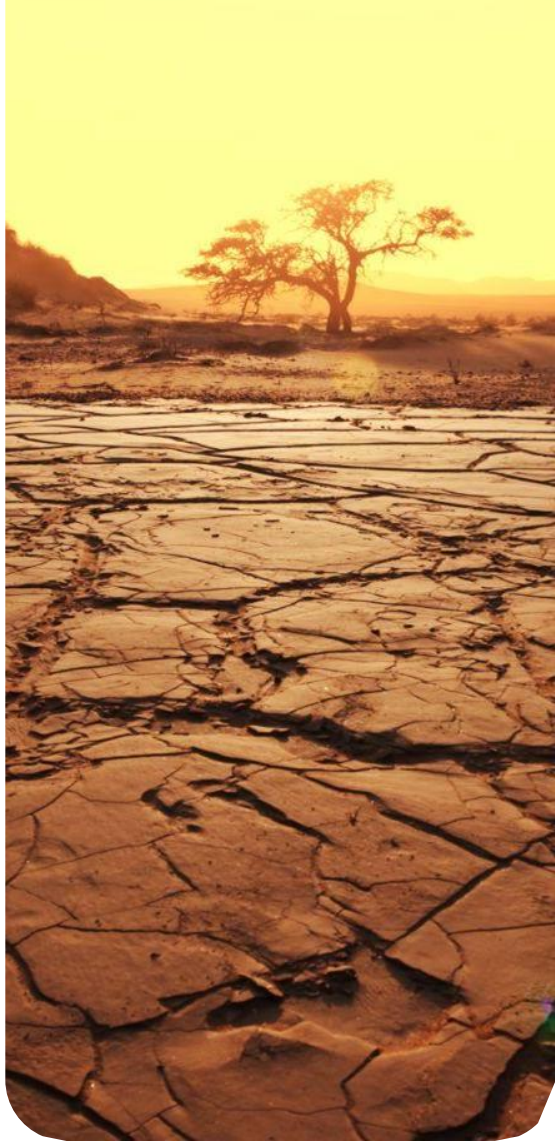
Aim: highlight the experience of cities in developing urban water resilience

Webinar 1, **Too Little**: 26 March

Webinar 2, **Too Much**: 18 June TBC

Webinar 3, **Too Dirty**: September

Webinar 4, **International Partnerships**: November



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ICLEI & WWC International Photography Competition

Aim: showcase and celebrate innovative local actions

Submit 1 photo in one or more of the following categories:

- **Too little water**
- **Too much water**
- **Too dirty water**

Submission deadline: **30 June 2025**

WEBINAR SERIES CitiesWithWater TOO LITTLE

ICLEI & WWC International Photography Competition

A dedicated prize of **€1,000** per category and for the best **youth** entrant (18-29 years) courtesy of our generous sponsors:

Government of the Netherlands

Water as Leverage For Resilient Cities

ARUP

WORLD WATER COUNCIL

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SURVEY :

Rank these actions for overcoming water scarcity in order of importance...

https://www.menti.com/algf2bibkn4v

Join at menti.com with the code: 1642 0120

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City of Cape Town

SOUTH AFRICA

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WORLD WATER COUNCIL

Ms. Thembisa Gqamane

Senior Professional Officer, Water and Sanitation Directorate

City of Cape Town

CITY OF CAPE TOWN
ISIXEKO SASEKAPA
STAD KAAPSTAD

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Formal areas
3.5 million people, 650,000 connections

Informal settlements
0.5 million people

businesses, industry & institutions
40,000 customers

CITY OF CAPE TOWN
ISIXEKO SASEKAPA
STAD KAAPSTAD

Water and Sanitation Department:
- 12 branches; 4,800 staff; 63 Depots
- R7.5 billion opex; R3 billion capex

Water Supply:
- 6 large dams
- 12 water treatment plants
- 24 reservoirs
- 11,000 km of pipelines
- 1,400 million litres/day peak production

Sanitation:
- 9,000 km of sewers
- 26 wastewater treatment works
- 3 sea outfalls

Storm water drainage

R75 billion assets

Introduction : City of Cape Town

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CitiesWithWater

TOO LITTLE

The City of Cape Town drought response

Water Conservation

Encouraging water saving behaviour

Water Demand Management

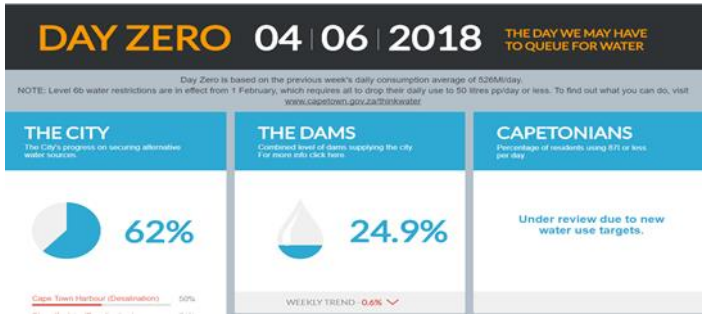
Technical interventions to reduce water loss

Augmentation

Establishing new sources of water

Disaster Planning

A plan in place for a worst case



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Pilot projects and Request for information on what is on Market

Leak detection

Pressure management

Section 80 Committee with water Experts

Network management

Business continuity and crisis coordination

Meter management

Tariff

Pressure reduction and cautions on high buildings in case of Fire

New Water Programme

Resilience Strategy

Water Demand management plan

Customer centric – Contact centre

KEY LESSONS FROM COMMUNICATION

Message must be data driven and not generic from the start

Building trust with Technical experts to drive communication

Institution to drive water conservation across All departments not just in the Water Department – LEAD the public from the START

Crisis communication vs Reputational communication and the complexities of a segmented market

There is no such thing as over communication during a crisis

Citizens to be Water Ambassadors from the start of your campaign

Do a press conference at the beginning of the crisis parallel to campaign to counter the negative narrative and miss- information of a "hoax" or "government made crisis"

Does operations drive communication or communication driven by operation to build the Trust – communicate immediately and brief journalist with the technical and operational data

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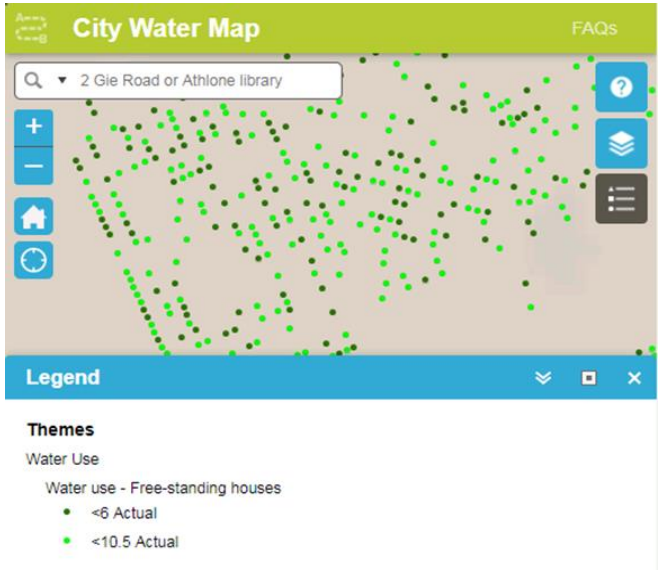
Community Engagement and door to door Awareness

Stakeholder Engagement – Economy and Tourism industry and Business Commerce



Academic and Industry experts

Informal traders – Car Wash ,hair dressers etc.

New Technology pilots – Water Map

Retrofit project in the informal settlements

Religious groups , Diversity , Culture, Equity and social inclusion

Household & business adaptation

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WHAT WORKED WELL

- INNOVATION - water Map
- WATER BYLAWS RESTRICTIONS
- GOVERNANCE
- DATA EXPERTISE
- COMMUNICATION AND CAMPAIGNS
- CRITICAL WATER SHORTAGES DISASTER PLAN

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KEY LESSONS FROM THE DROUGHT

- Cape Town is vulnerable to climate change-related risks

The City needs to diversify its water sources

- We survived the drought by dramatically reducing demand.

It is important to focus on water saving while you still have water and cautiously raise restrictions when necessary . This was a joint effort between the municipality and every customer.

- You can't build your way out of a drought.

Need to plan and build ahead of time, diversify sources and improve regional bulk supply. One cannot start planning, design and constructing schemes during a drought. The planning and design where possible has to happen upfront. This is why proactive planning is essential.

- The Importance of data and information

This helps in understanding the magnitude of the drought, management of water resources and in communication. The City also developed a Decision Support System post drought to help with the management of water resources

- We are using the shock of the drought to build water resilience

The shock of the recent drought has resulted in Cape Town (City and its residents) reassessing its relationship with water.

- Don't let a good crisis go to waste

Use the crisis to improve inclusion, sewerage, customer orientation and financial sustainability

FIVE COMMITMENTS

Inclusion

1. **Safe access** to water & sanitation **for all**

Resilience

2. **Wise use** by all water users
3. **Sufficient, reliable water from diverse sources**
4. **Shared benefits & managed risks** from regional water resources

Sustainability

5. **Water sensitive city** by 2040

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City of Barcelona

SPAIN

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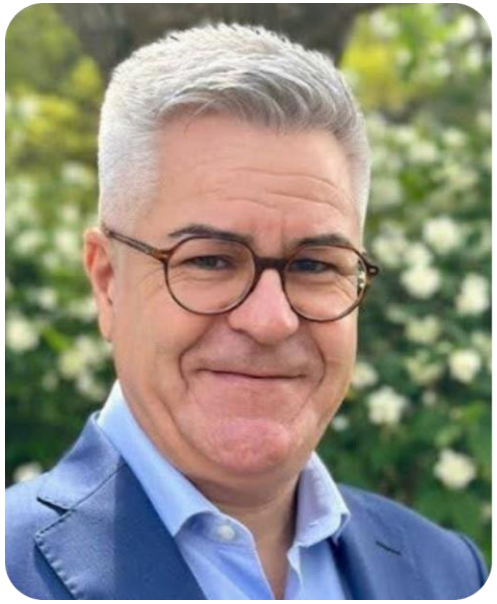


Mr. Fernando Cabello, PhD

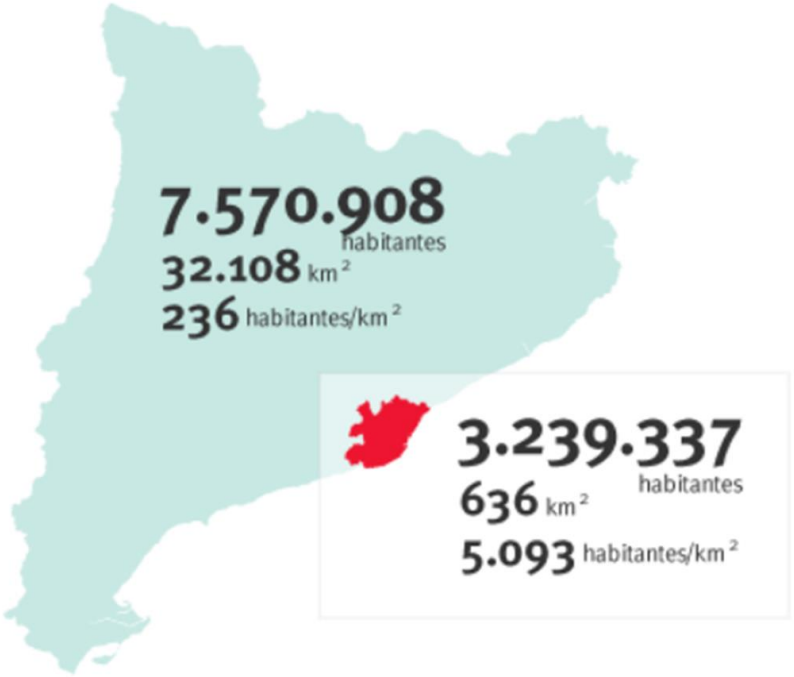
Director of Serveis del Cicle de l'Aigua

Àrea Metropolitana de Barcelona (AMB)

AMB Àrea Metropolitana de Barcelona

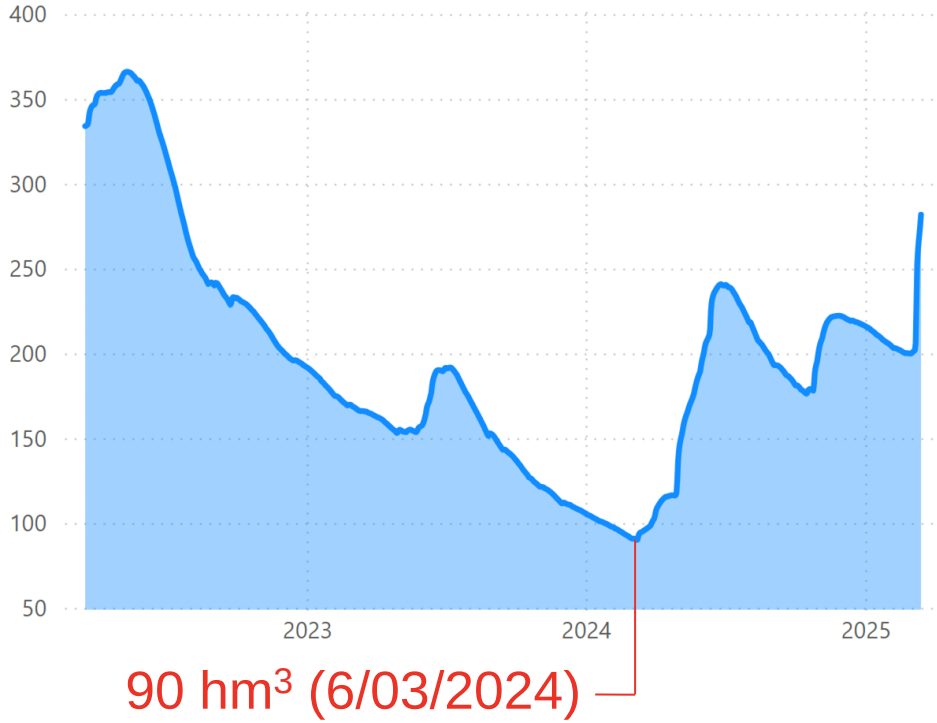
Barcelona metropolitan Area

- AMB is a metropolitan public authority, which provides services to 36 municipalities (including Barcelona) and has full competences in water management.
- 199 hm³/year of potable water consumption (2024)
- 42.8% of Catalonia's population lives within just 2% of its territory



A long-lasting and severe drought

- An intense drought lasting over three years (over the last two weeks, significant rainfall has finally started)
- On March 6, 2024, the reservoirs in the region hit a historic minimum, providing a guarantee of drinking water supply for only a few months — possibly just weeks



Efficiency of the water distribution network and domestic consumption

- The efficiency of the public water distribution network is approximately 85%
- Water leakage represents only 5% of total losses in the network. 10% is due to under-registration by water meters and unrecorded consumption, including some cases of fraud
- Domestic consumption is 102 L/person/day

The challenge is due to a shortage of water resources, rather than excessive consumption or poor management practices

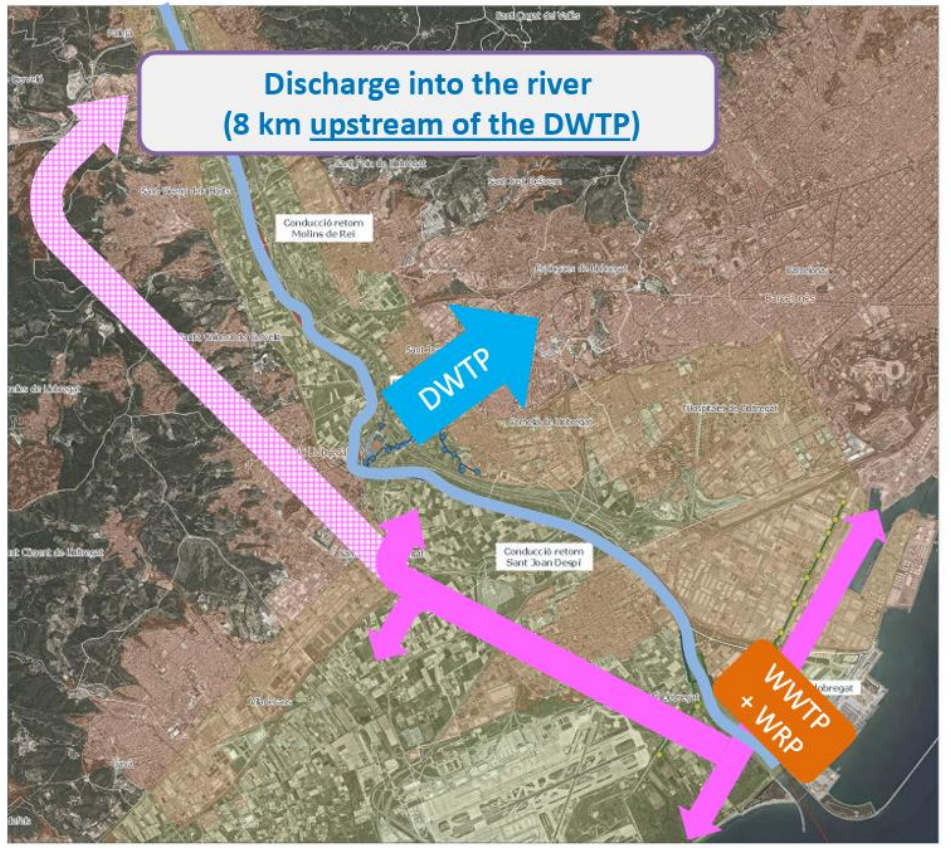
Most significant measures implemented

- Public awareness campaigns focused on responsible water consumption
- Pressure reduction in the water distribution network to decrease consumption and water losses
- Expanded production of desalinated water
- Indirect drinking water reuse

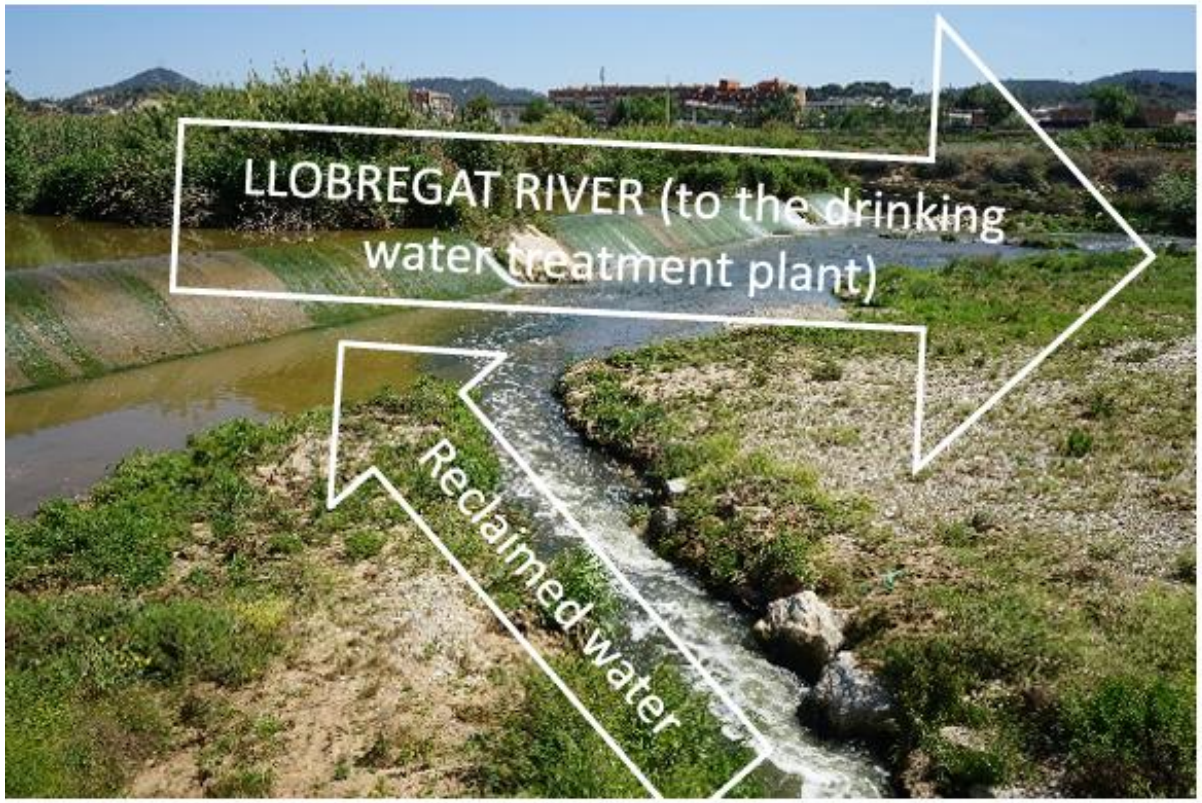
Indirect drinking water reuse

Barcelona's water supply from Llobregat river

Indirect drinking water reuse during extreme drought



Indirect drinking water reuse



- ✓ Conceives as a safety network, it has been in continuous use for 1,5 years
- ✓ Up to 1,75 m^3/s of reclaimed water was discharged into the Llobregat river, 8 km upstream of the Barcelona's DWTP
- ✓ Dilution reached 1:1 (river water : reclaimed water)
- ✓ During the most critical phase of the drought, 25% of the potable water supply came from reclaimed water and 33% from desalinated sources, with non-conventional resources representing a total of 58%.

2030 Government's goal

- **By 2030, the aim is to ensure than over 70% of the water consumption should come from non-rainfall-dependent sources.**
- The objective will be reached by increasing the number of water reclamation plants and desalination facilities.

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City of Sao Paulo

BRAZIL

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Mr. Benedito Braga

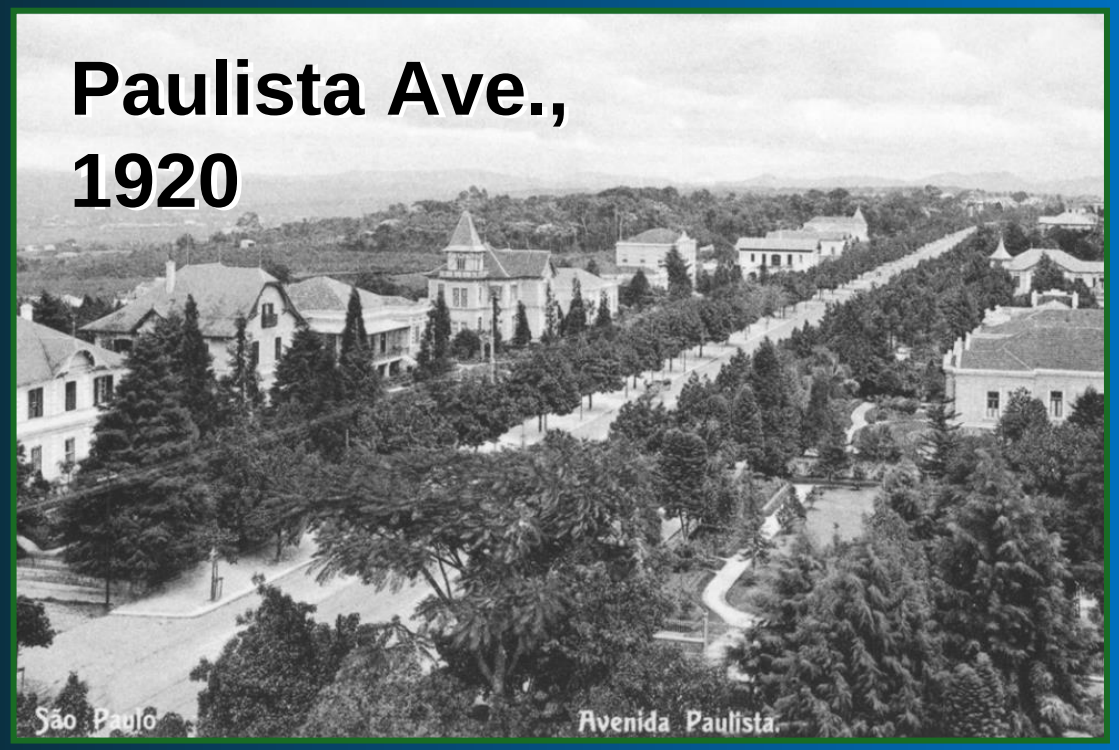
Former CEO of SABESP & current President of Latin-American Water Council

sabesp

Sao Paulo Metropolitan Region

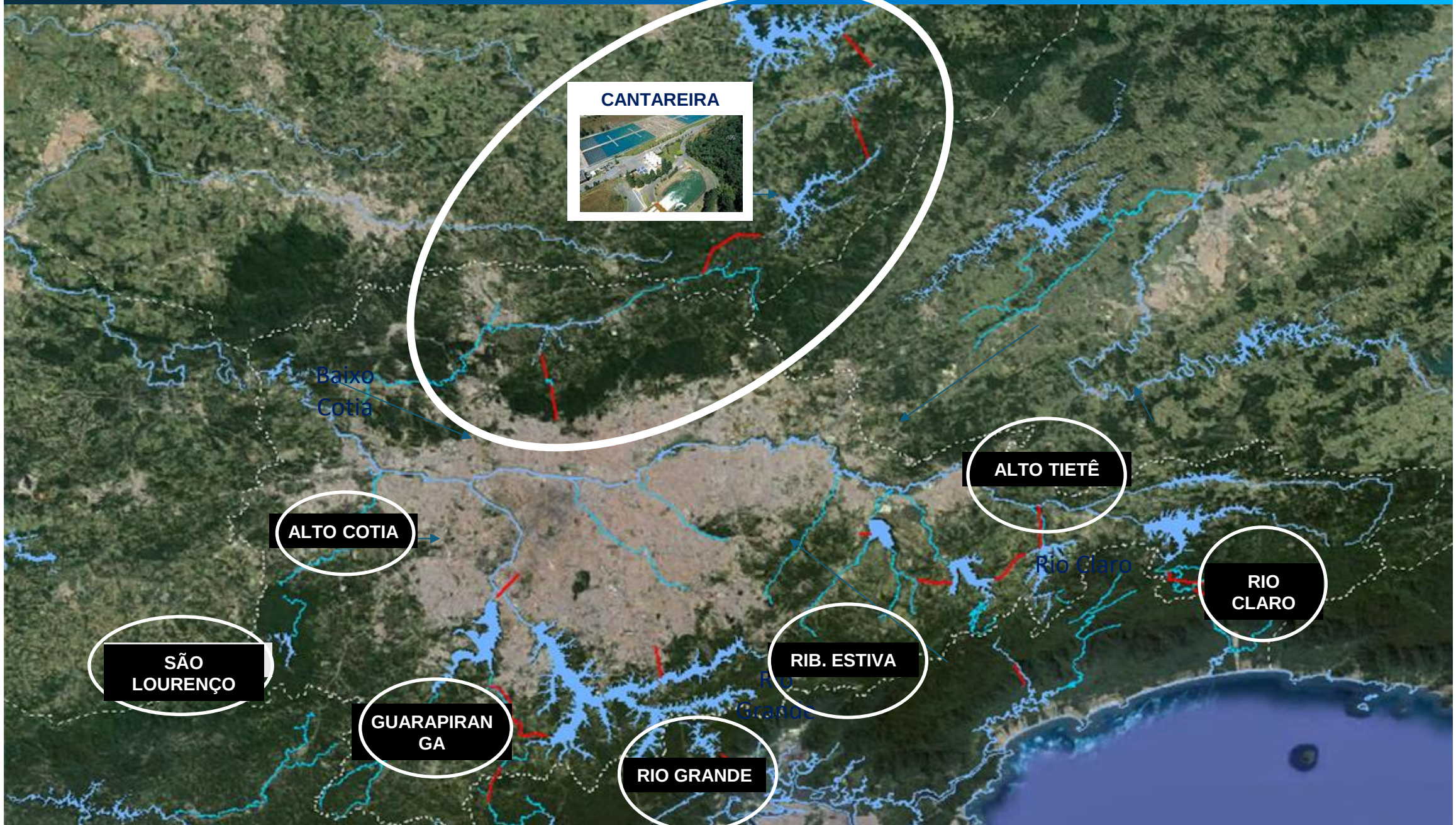
8th most populated region worldwide

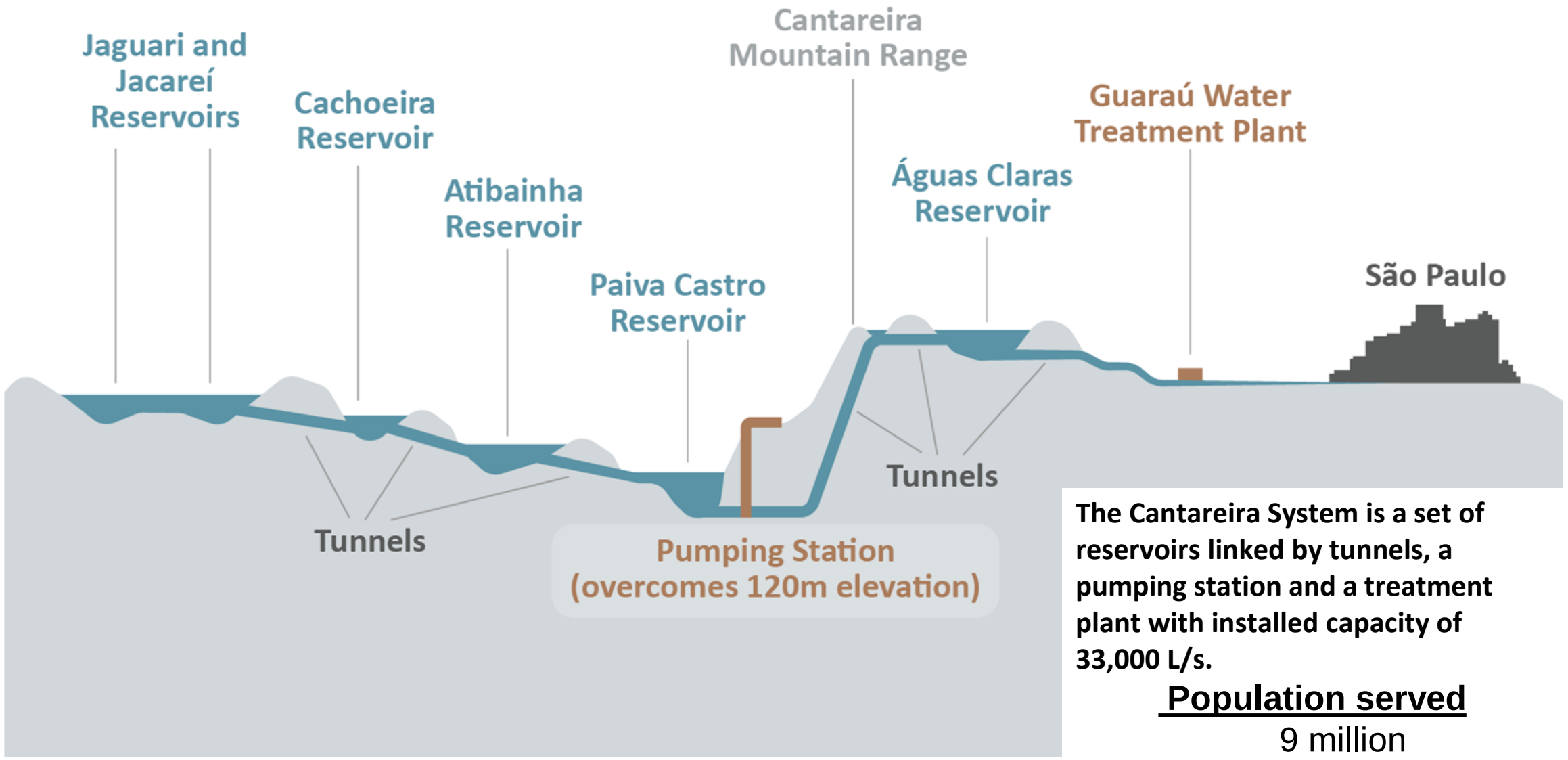
- Southeast region (Brazil): 90 inhab./km²
- São Paulo State: 180 inhab./km²
- Metropolitan Region of São Paulo 2,700 inhab./km²



Rapid growth of urban population has been a general trend in most developing countries over the past century

Sao Paulo Metropolitan Region



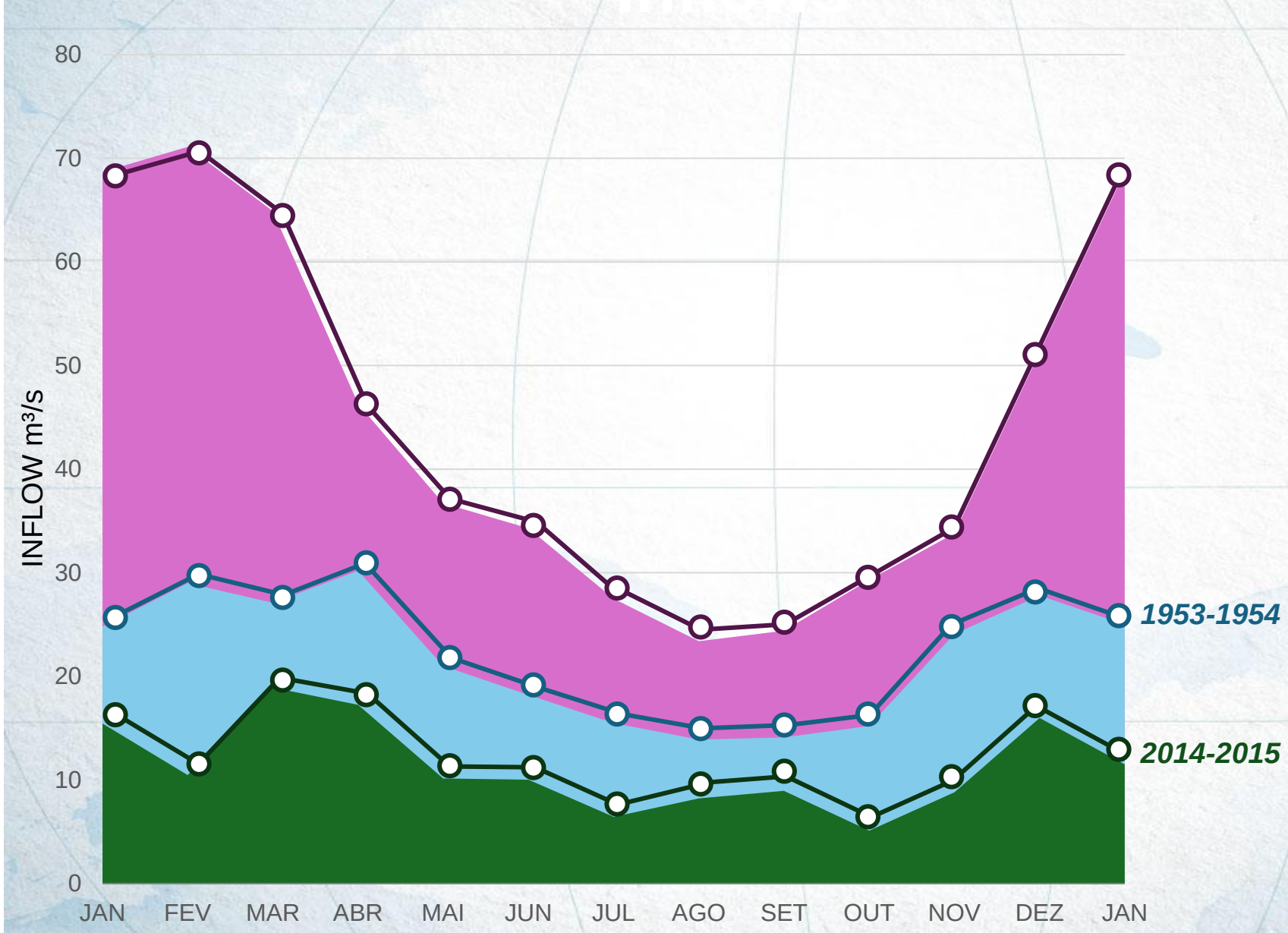


The Cantareira System is a set of reservoirs linked by tunnels, a pumping station and a treatment plant with installed capacity of 33,000 L/s.

Population served

9 million

Cantareira System – Monthly Average Inflows



Probability

2014/2015

0.4%

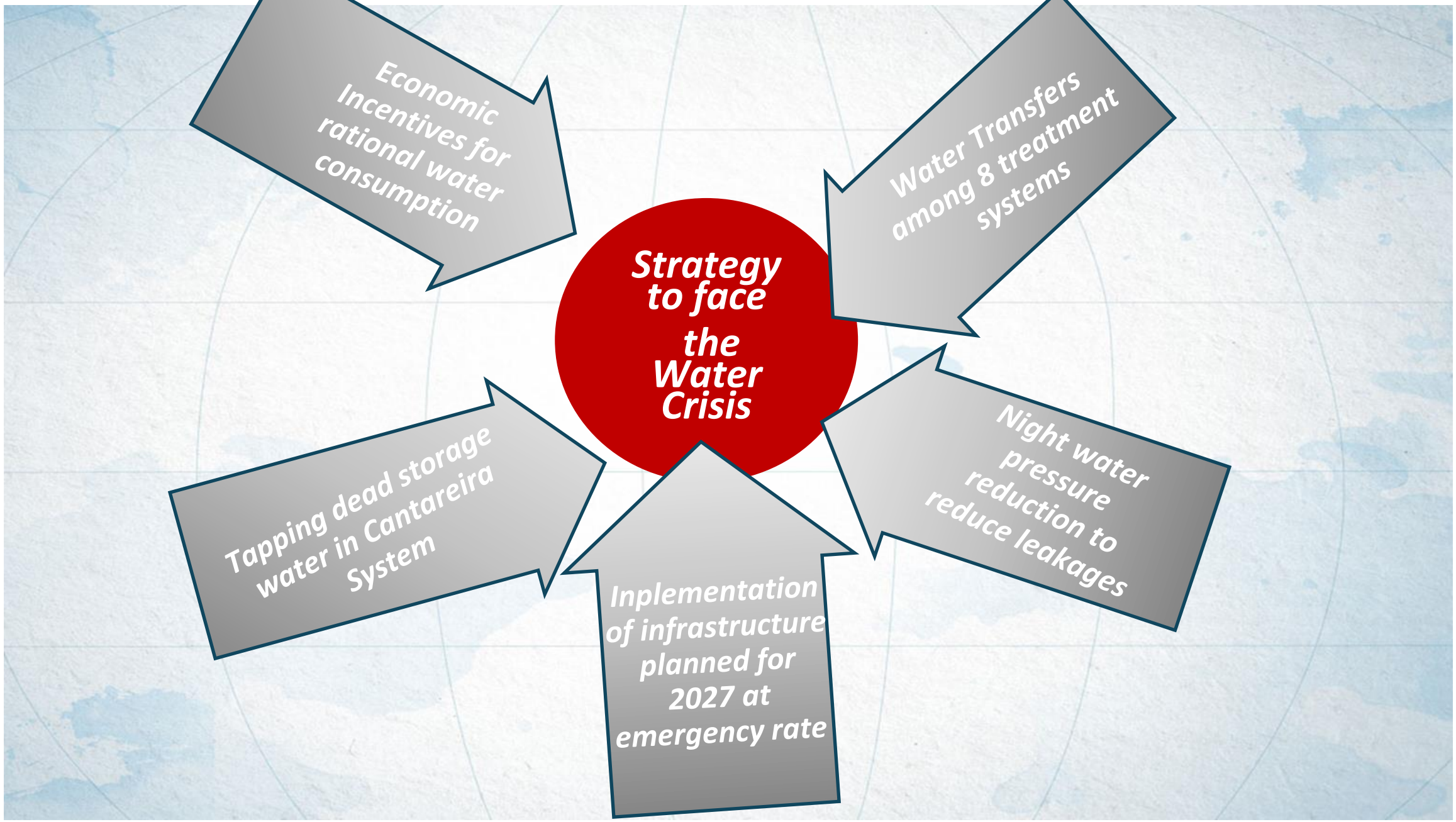

Water intake
Tunnel 7
Image © 2016 DigitalGlobe
Image © 2016 CNES / Astrium
Jacareí reservoir
46% storage
volume

Water intake - Tunnel 7
30 meters high

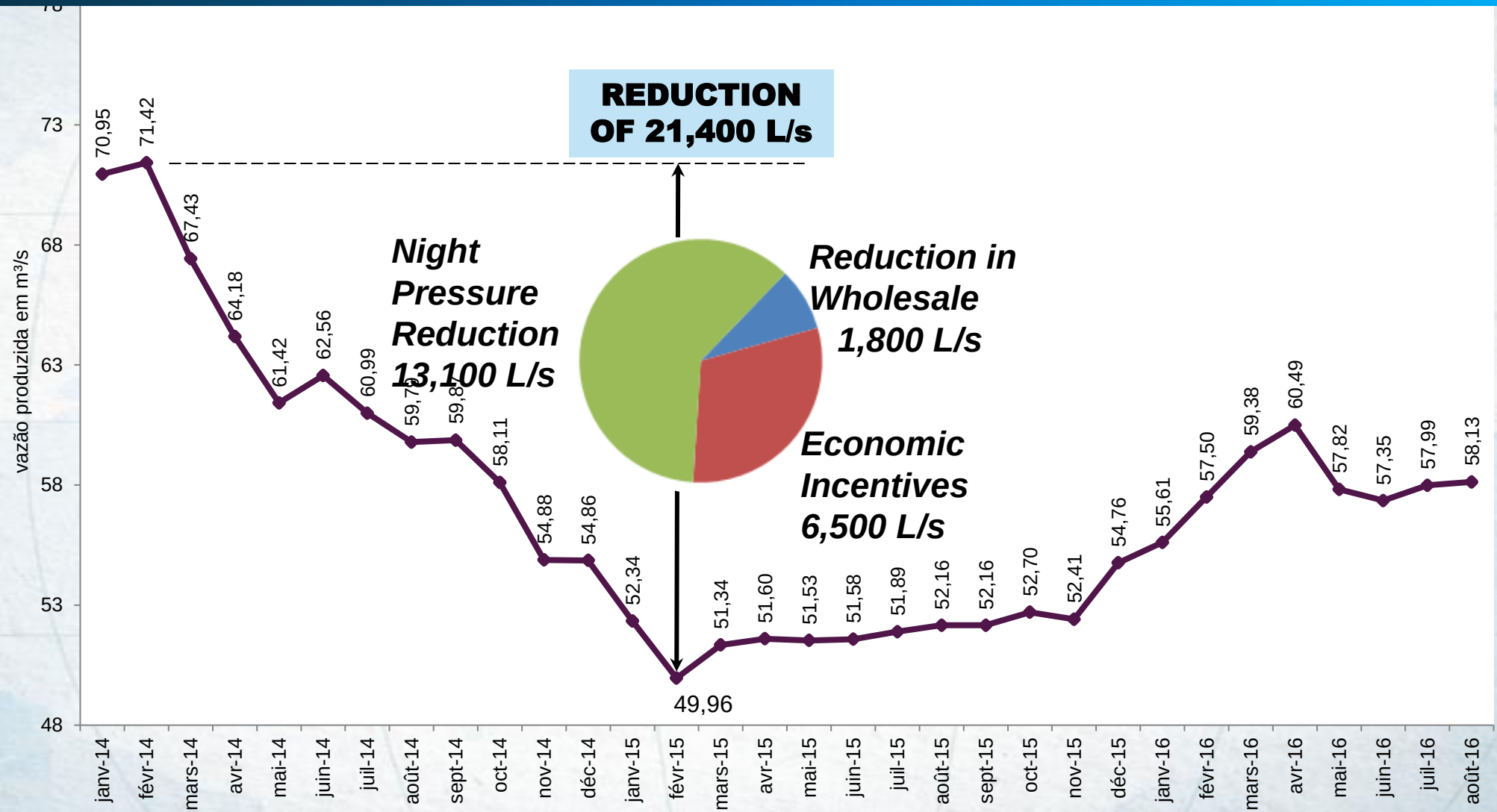
Image © 2016 DigitalGlobe

Jacareí reservoir
February 2015
5 % storage volume


Brazil's worst drought in history prompts protests and blackouts
Lights go out, internet is cut for days, and agriculture is suffering as crisis spreads from São Paulo to Rio de Janeiro and beyond
The Guardian
FERNANDO REINACH
A água do Sistema Cantareira pode acabar?
RAIO X
Evolução do volume acumulado no sistema equivalente
VOLUME ACUMULADO MÍNIMO NO SISTEMA EQUIVALENTE PARA RETIRADA POR GRAVIDADE
Você já deve saber que nossa água está acabando. Assim, quando me deparei com o se-
Andreu respondeu: "Se nós tivermos um ano parecido com esse, não tere-mos uma resposta satisfatórias na re-
Battered by Drought
Scientists watch as the rainforests, farmlands, and rivers are stressed by the country's worst drought in over 90 years.
CRISE HÍDRICA EM SAO PAULO
CNN BRASIL
BUSINESS
tê, manancial que abastece
esgotado na Copa


Economic Incentives for rational water consumption
Water Transfers among 8 treatment systems
Strategy to face the Water Crisis
Tapping dead storage water in Cantareira System
Night water pressure reduction to reduce leakages
Inplementation of infrastructure planned for 2027 at emergency rate

SPMR total treated water reduction



Dead storage I: adding 184 billion Liters

REDUNDANT INFRASTUCTURE

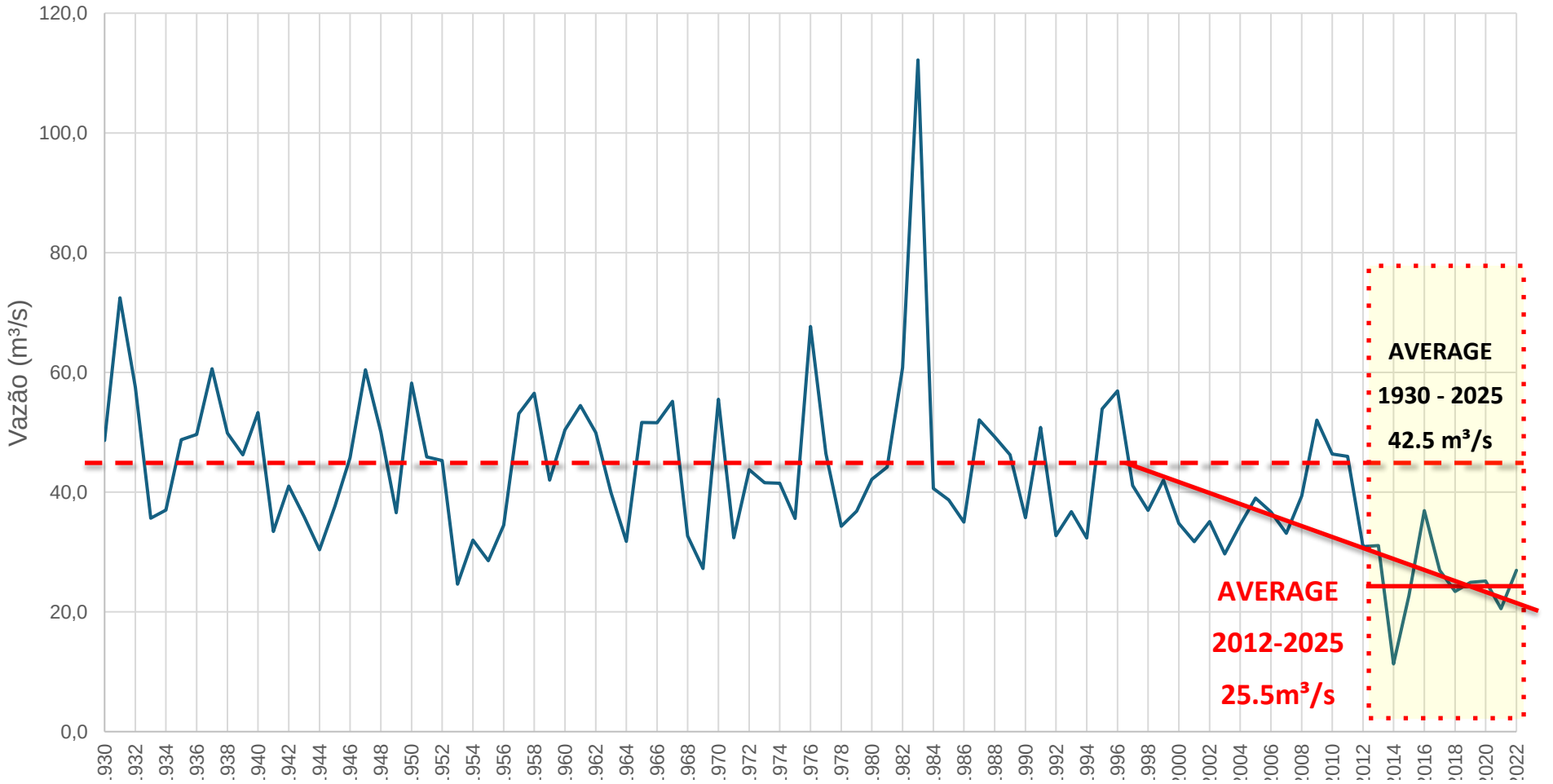
SÃO LOURENÇO INTERBASIN TRANSFER

82 km from the intake, adding up to 6,400 L/s to the West Side of SPMR - 2 million people served. Investment R$ 2.2 billion

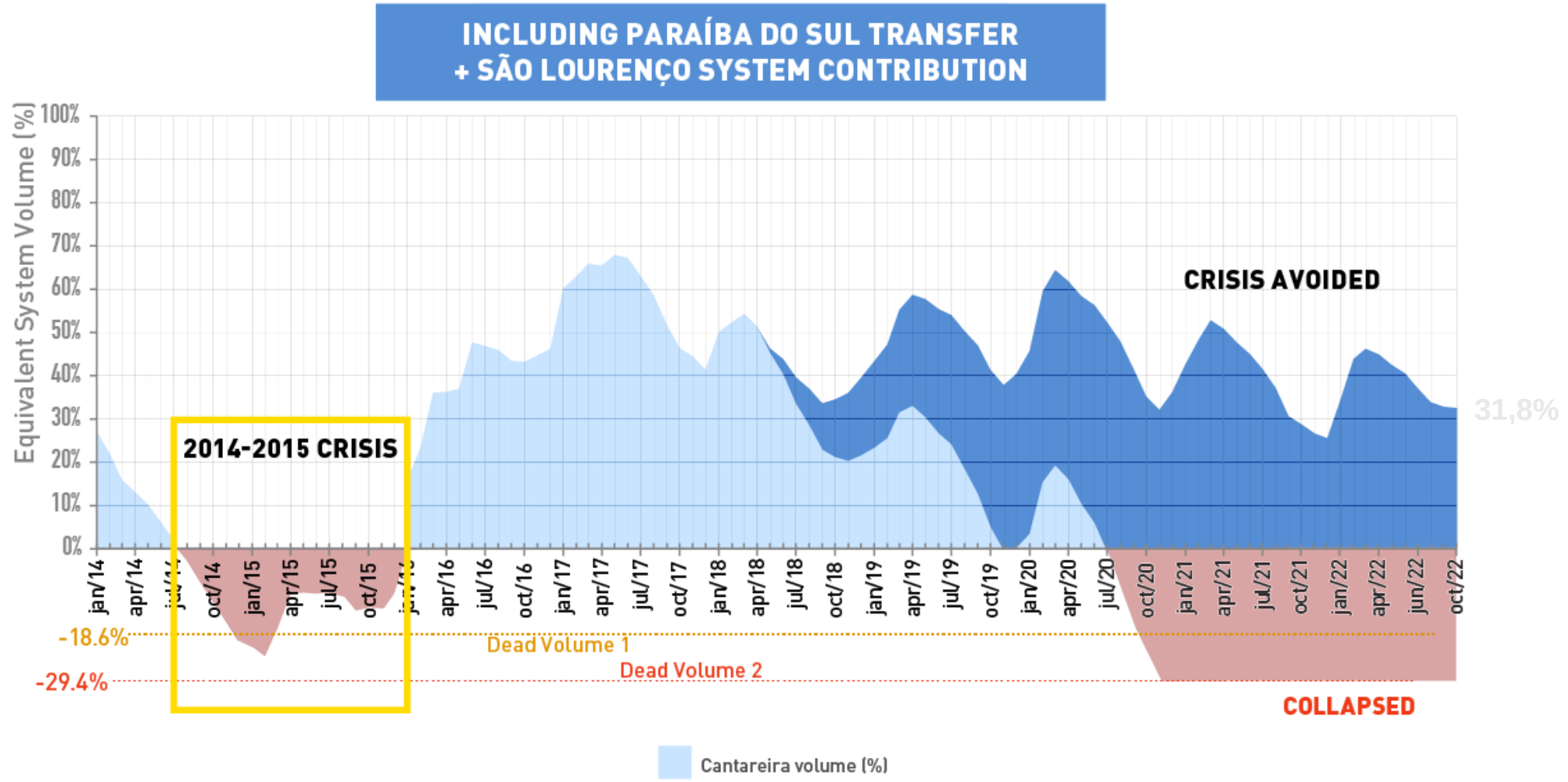
JAGUARI – ATIBAINHA INTERBASIN TRANSFER

13.2 km (6.4 km tunnel) - Transf. of up to 8,500 L/s. From Jaguari dam, Paraíba do Sul basin to Atibainha dam (Cantareira system). Investment R$ 550 million

AVERAGE ANNUAL INFLOW CANTAREIRA SYSTEM (m³/s)



CANTAREIRA SYSTEM 2014 – 2022 – *Storage volume (m³/s)*



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LESSONS LEARNED

- **Redundant infrastructure is needed to face current high climate variability.**
- **Economic instruments to incentivize rational and efficient water use are important and can be implemented during water crisis.**
- **Correct, transparent and technically sound communication is fundamental for the success of implementing the necessary tough measures.**
- **Crisis situations are also an opportunity for professional class to convince the political class to act towards improving financing and regulation in the water sector.**

Thank you for your kind attention

Ben Braga
President
Latin American Water Council
benbraga@cla-agua.org

CONSEJO LATINOAMERICANO DEL AGUA
CONSELHO LATINO-AMERICANO DA ÁGUA

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Marrakech

MAROC

Mohamed El Idrissi

1er Vice President

De la commune de Marrakech

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Royaume Du Maroc
Ministère De L'intérieur
Wilaya De La Région Marrakech Safi et préfecture de Marrakech
Commune de Marrakech
Direction Générale des Services
Division des études, planification et transformation digitale

Gestion du stress hydrique au niveau de la ville de Marrakech

Contexte hydrique de Marrakech

Ressources en eau limitées

Climat :

Semi-aride

Précipitations :

en moyenne **250mm/an**

Températures moyennes mensuelles :

Hiver : 5° à 18° C
Été : 19° à 38° C

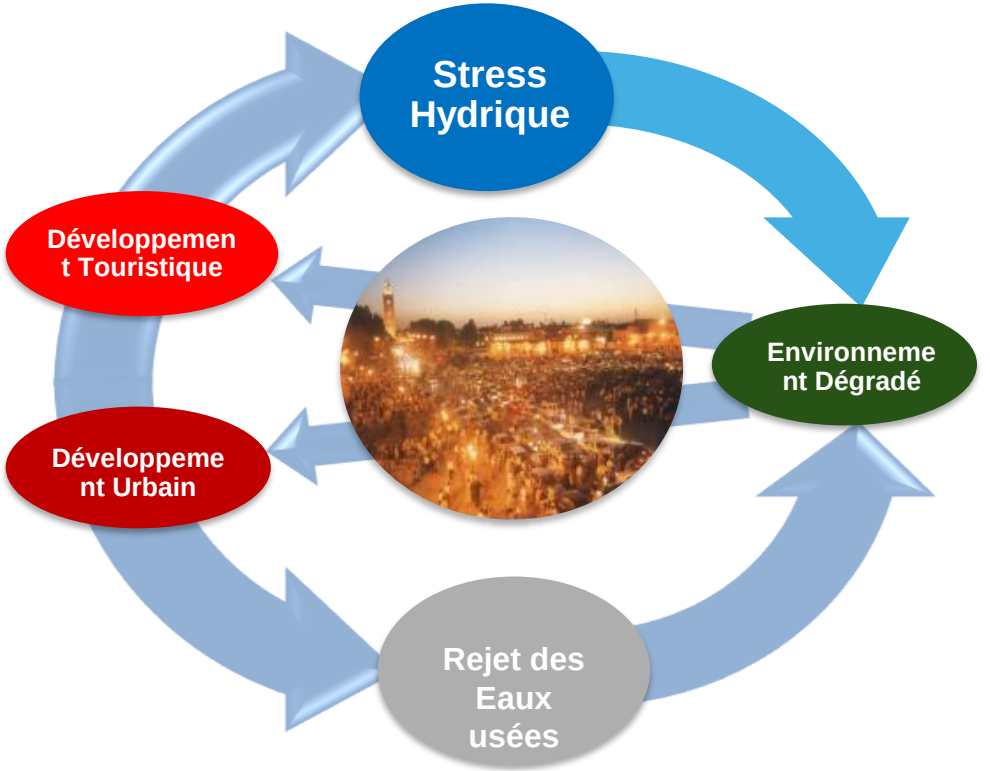
Région à stress hydrique :

Déficit : dépassant **200 M**m^3/an

Région à vocation agricole

Usage de l'eau :

Eau Potable	:	11 %
Agriculture	:	89 %

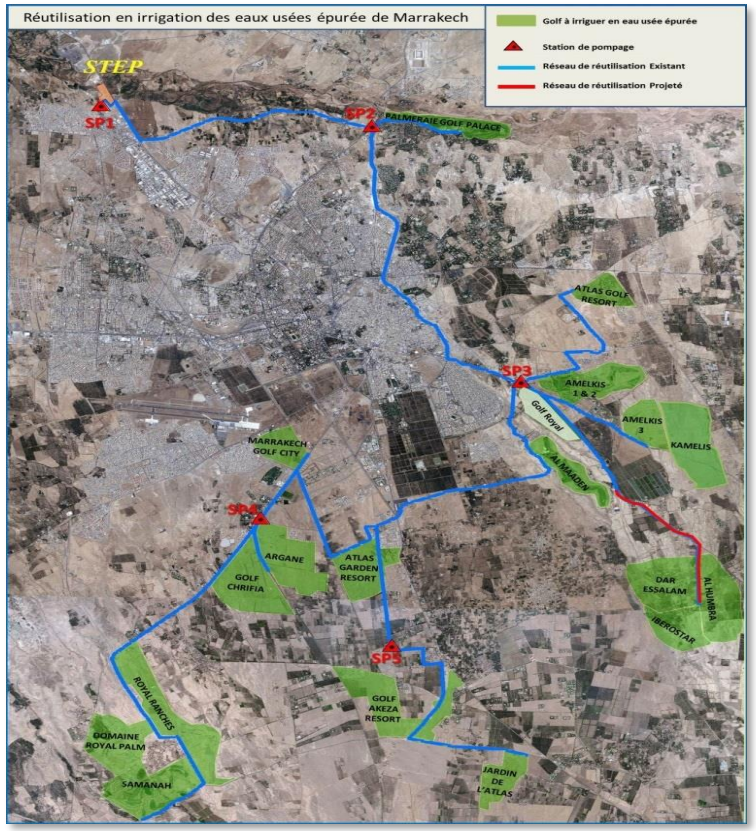


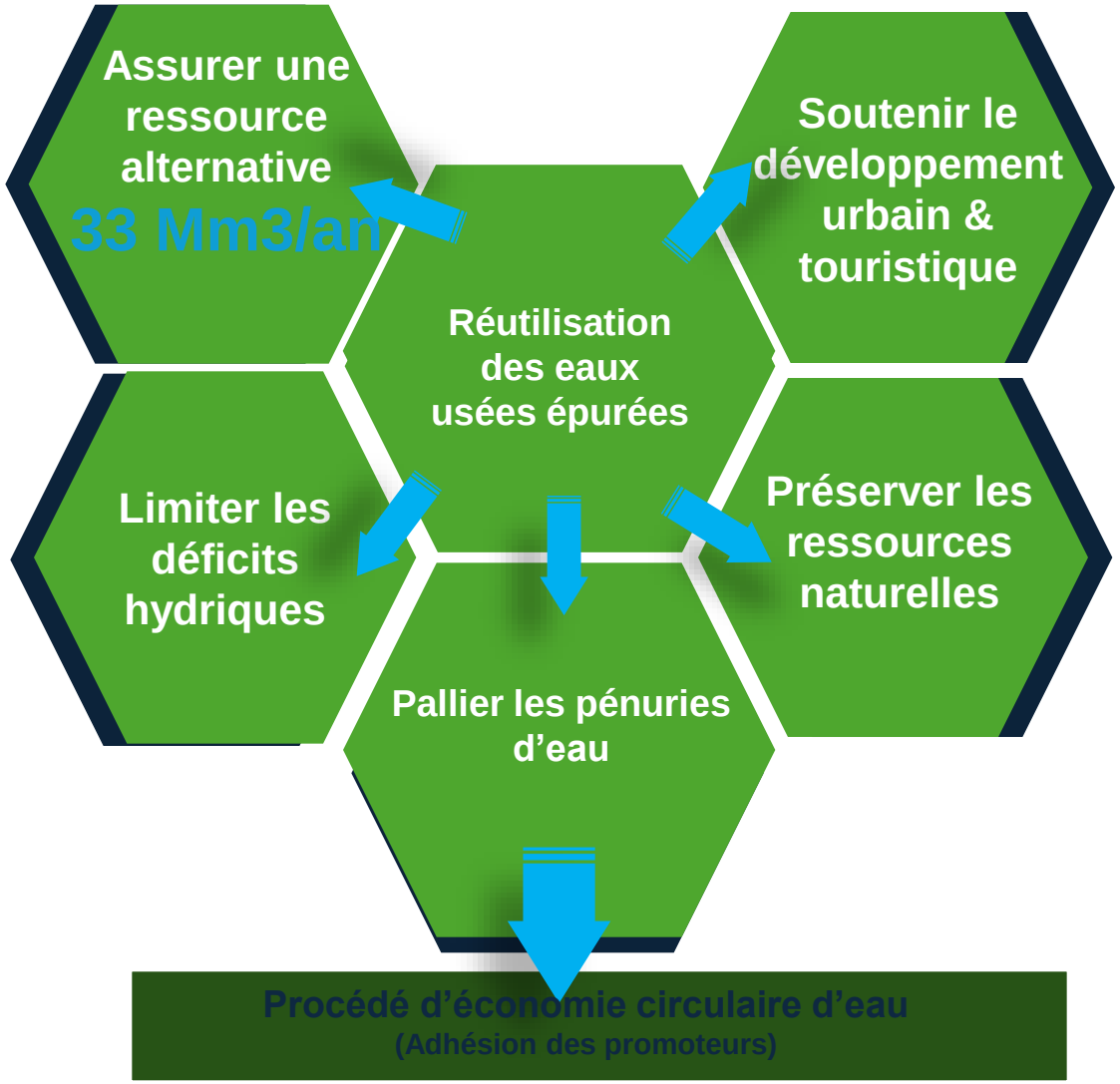
Stress accentué
Dérèglements Climatiques

<u>Mesure d'adaptation</u>
Recours aux eaux non conventionnelles
Réutilisation des eaux usées épurées
(potentiel de 33 Mm^3 /an)

Epuration des eaux usées et leur réutilisation - Genèse du Projet

Projet identifié en 2010 pour l'irrigation de 21 projets golfiques (19 Mm³/an), de la palmeraie (1,5 Mm³/an) et des espaces verts (3,6 Mm3/an) soit 24,1 Mm³/an





Epuration des eaux usées et leur réutilisation - Genèse du Projet

Composantes du Projet

1- Station d'épuration des eaux usées

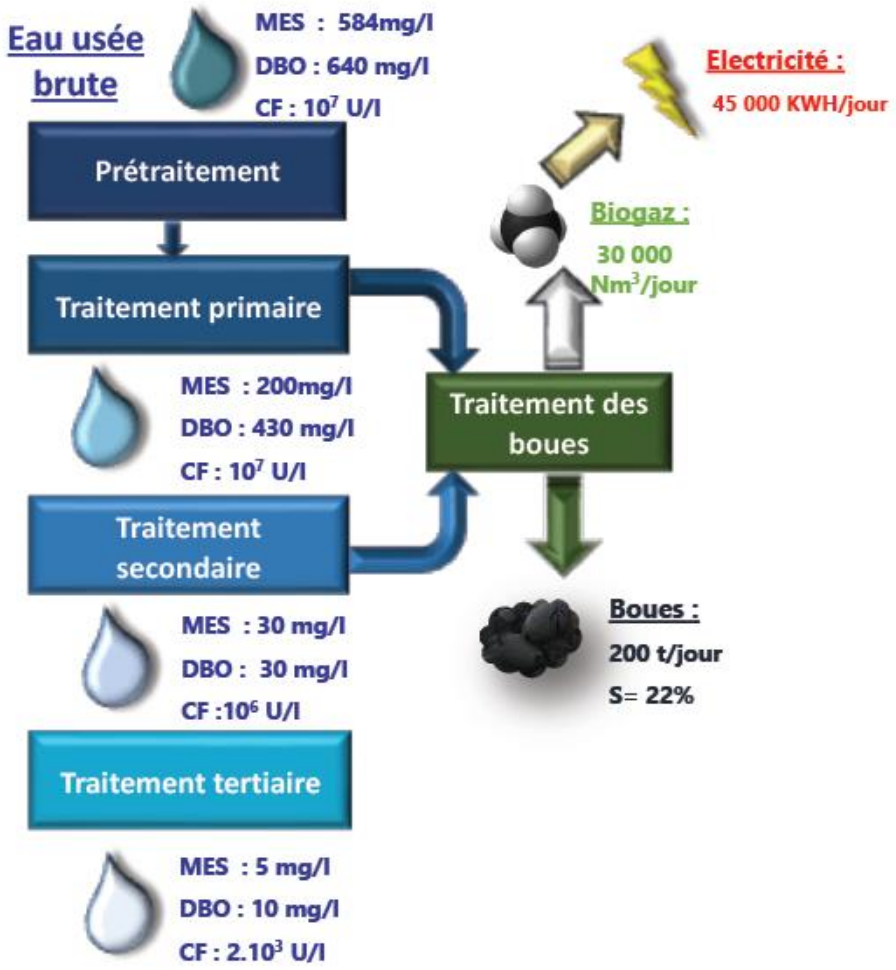
- **Traitement primaire & secondaire :**
  Boues activées 1 800 000 EH
  143 600 m³/jour

- **Traitement tertiaire :**
  Filtration + Désinfection UV
  84 000 m³/jour

2- Réseau de distribution des eaux usées épurées

87 km de réseau
5 stations de pompage

Un investissement global de 1,505 Milliard DH



Niveau dépollution : >95%

Traitement tertiaire : Eaux usées épurées conformes aux exigences de la Classe A de la norme marocaine & de l'OMS

Irrigation des golfs de Marrakech en eau usée épurée

STEP : 33 Mm^3 ➡ capacité maximale de traitement tertiaire

Montage initial

21 Golfs (19 Mm^3)	Irrigation de la palmeraie (1,5 Mm^3)	Irrigation des espaces verts (3,6 Mm^3)
Investissement 1 505 MDH-HT		Investissement 53,9 MDH-HT

RADEEMA	Etat	Bénéficiaire	Etat	Commune Marrakech
780,5 MDH	211,5 MDH	513 MDH	36,7 MDH	17,2 MDH
52%	14%	34%	68%	32%

Situation actuelle (2025)

13 Golfs (10 Mm^3)	Irrigation de la palmeraie	Irrigation des espaces verts (3,6 Mm^3) Travaux achevés
Investissement 1 505 MDH-HT		Investissement 53,9 MDH-HT

RADEEMA	Etat	Bénéficiaire	Etat	Commune Marrakech
963,5 MDH	211,5 MDH	330 MDH	36,7 MDH	17,2 MDH
65%	14%	21%	68%	32%

Préfinancement
183 MDH

Irrigation de la palmeraie en eau usée épurée

Objectif

Irrigation 400 000 palmiers des palmeraies Oulja et Abiad en EUE

Coût d'investissement

16,75 MDH-TTC

Etat d'avancement

Zone Oulja : En exploitation

Arrosage des espaces verts de Marrakech en eau usée épurée

26 Espaces verts

307 ha Superficie totale à arroser

228 ha Superficie utile

3.6 Mm^3/an Besoin annuel moyen

19 700 m^3/jour Besoin journalier de pointe

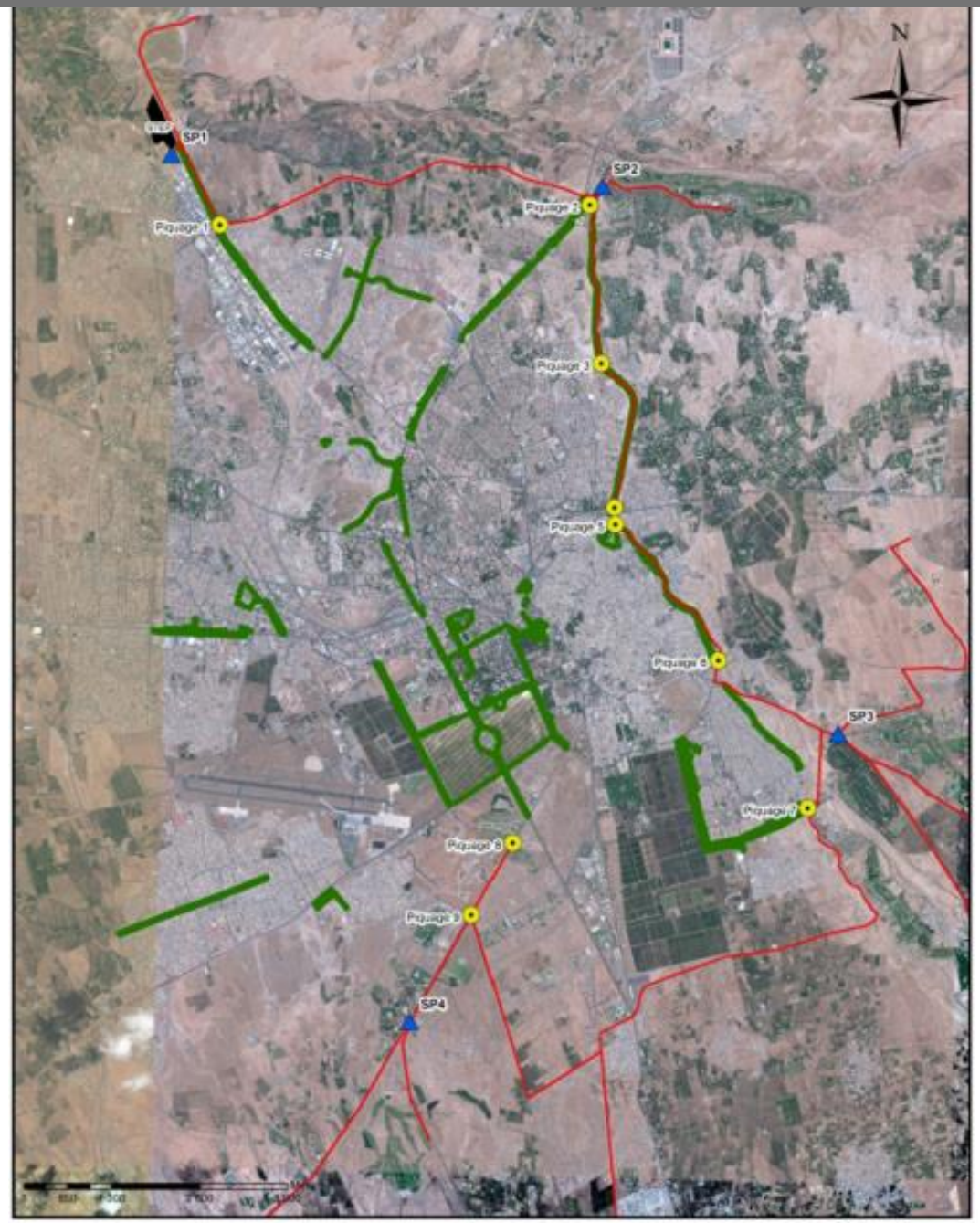
9 Piquages

16 Bâches de pompage

20 km Conduites d'extensions

64,7 MDH TTC **Coût Global**

PNAM	26 MDH-TTC
DGCT	18 MDH-TTC
Commune de Marrakech	20,7 MDH-TTC



RESEAU PRIMAIRE D'ARROSAGE A LA VILLE DE MARRAKECH PAR LES EAUX USEES TRAITEES

Les travaux d'infrastructures de réseau primaire d'arrosage liés à la ville de Marrakech – Tranche 1 :

- **SP14** : Bvd Abdelkrim Al Khattabi
- **SP18** : Bvrd Mohamed 6 ; Bvd MY Rachid (ghabat chabab) ; Bvd AL Ordoun;
- **SP18** : Bvd Mohamed 6 ; Bvd MY Rachid (Nzahat My AL Hassan) ;Bvd Kennedy ; Bvd Al Khattabi (place d'arme) ; Bvd AL Moukaouama (college Lalla Maryem).
- **SP17** : Ghabat chabab (Bvd Guemassa) ; Bvd EL Yarmouk Giratoire zanbouaa
- **SP17** : Ghabat chabab (Bvd EL YArmouk) ; Bvd EL Yarmouk entre Giratoire Bab Jdid ; Arsat Moulay Abdesalam.
- **SP13** : Bvd route Asafi vers MCDO ;Bvd Abdelkrim Al Khattabi vers giratoire koudya et Bvd 18 Nouvembre
- **SP11** : Bvd route Asafi vers giratoire Ayachi

terrassement

pose de conduite

remblais

équipements

regards

réfection


Eau non Potable
Strictement Réservée à l'Arrosage


inwi
معاكم كل يوم
ماء غير صالح للشرب
خاص للسقي


ماء غير صالح للشرب
خاص للسقي


3
= 6 Go


Eau non Potable
Strictement Réservée à l'Arrosage


3
= 6 Go
inwi
معاكم كل يوم


ماء غير صالح للشرب
خاص للسقي

Potentiel EUE et projet en perspective

Mobilisation des eaux usées épurées de Marrakech - Priorisation :

Horizon 2030

143 600 m³/j

TP + TS

84 000 m³/j

TT 1

TP + TS Extension

60 000 m³/j

TT 2

50,84 Mm³/an

139 292 m³/j

1 STEP (Eau de process) — 4 000 m³/j — 1,46 Mm³/an

2 Golfs — 84 800 m³/j — 19,90 Mm³/an

3 Palmeraie de Marrakech — 1 986 m³/j — 0,725 Mm³/an

4 Espaces verts de Marrakech — 19 726 m³/j — 3,60 Mm³/an

5 Industrie — 65 750 m³/j — 16 Mm³/an

6 Agriculture & Autres usages — 40 000 m³/j — 9 Mm³/an

Royaume du Maroc
Ministère de l'Aménagement du Territoire National, de l'Urbanisme, de l'Habitat et de la Politique de la ville

التعاون الألماني
DEUTSCHE ZUSAMMENARBEIT
Réalisé par : giz

Objectif du projet
Pour la ville de Marrakech

« La gestion de l'eau en milieu urbain à Marrakech est davantage axée sur l'économie circulaire et la résilience climatique ».

Visions:

- Une bonne gestion des risques urbains relatifs à l'eau (sècheresse et inondations);
- Une planification et un aménagement urbains intégrant le secteur de l'eau;
- Une économie considérable de l'eau à Marrakech à l'issu de l'économie circulaire.

Pour:

Une meilleure gestion hydrique et un cadre de vie amélioré pour les citadins de Marrakech

Royaume du Maroc
Ministère de l'Aménagement du Territoire National, de l'Urbanisme, de l'Habitat et de la Politique de la ville

التعاون الألماني
DEUTSCHE ZUSAMMENARBEIT

Réalisé par : giz

Objectif du projet
Pour la ville de Marrakech

- Élaboration de la vision de la ville
- Projet bancable pour la ville couplant l'eau et l'urbanisme
- Renforcement des capacités

Sècheresse

Inondations

MERCI POUR VOTRE ATTENTION