
The Circular Business Case for Water
CEBDS & WBCSD
Brasilia, 18 March 2018
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Welcome!

Agenda (Part 1)

Theme 1: The business case – how to win over all stakeholders and what policies are needed for scale-up? (Coordinator: WBCSD)		
14:00 – 14:05	Welcome by chair/moderator	Nathália de Barros, Environmental Manager, Casa da Moeda
14:05 – 14:15	The Business Guide to Circular Water Management	Sara Traubel, Manager Water, WBCSD
14:15 – 14:35	Insight presentations • Pierre Victoria, Senior VP Sustainable Development, Veolia • Antonio Calcagnotto, VP Public Affairs & Sustainability, Unilever Brazil • Oded Distel, Director, Israel New Tech & Eco Systems	
14:35 – 14:45	Moderated discussion	Nathália de Barros, Environmental Manager, Casa da Moeda
14:45 – 14:50	Participants break out into discussion tables	WBCSD to coordinate, facilitators to place themselves by one of three discussion tables
14:50 – 15:20	Facilitated breakout discussion	Facilitators: • Diana Rojas, Senior Program Officer, Global Program Water SDC • Pascale Guiffant, Board member, Toilet Board Coalition • Rodrigo Simonato, FEMSA

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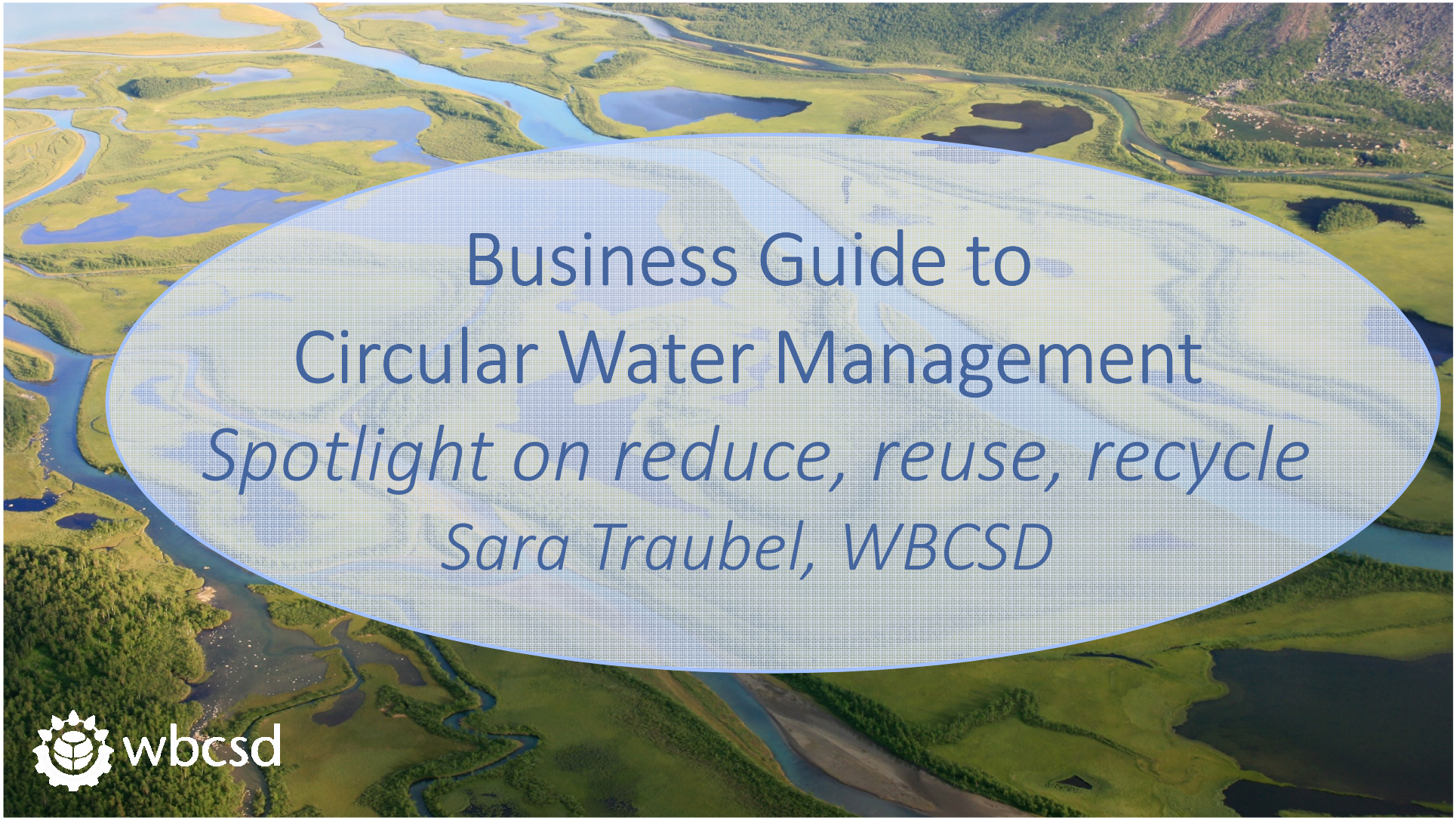
Business Guide to
Circular Water Management
Spotlight on reduce, reuse, recycle
Sara Traubel, WBCSD
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3M
ABB
Abbott
accenture
acciona
acer
ADM
ADITYA BIRLA GROUP
AkzoNobel
APRIL
ARCADIS
ArcelorMittal
BAIN & COMPANY
Baker McKenzie
BARRY CALLEBAUT
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Henkel
HITACHI
Inspire the Next
HONDA
IBERDROLA
IFF
IKEA
Infosys
innogy
InterCement
INTERNATIONAL PAPER
Enduring Value
JAIN
Jain Irrigation Systems Ltd.
JPMORGAN CHASE & CO.
Kellogg's
KERING
KOMATSU
KONE
KPMG
KUMHO TIRES
LafargeHolcim
LeasePlan
LDC.
Louis Dreyfus Company
Mahindra
Rise.
MASISA
más confianza
MICHELIN
A better way forward
Microsoft
Mitsubishi Chemical Holdings
Mitsubishi Corporation
MITSUBISHI
mondi
MONSANTO
natura
NAVIGANT
THE NAVIGATOR COMPANY
Nestlé
Good Food, Good Life
HYDRO
NOVARTIS
novozymes
Nutrien
Olam
OVG
real estate
PEPSICO
PHILIP MORRIS INTERNATIONAL
PHILIPS
PIRELLI
P&G
Port of Rotterdam
PTT Public Company Limited
pwc
Rabobank
Reliance
Industries Limited
RENAULT NISSAN
Roche
سابك
sabic
SAINT-GOBAIN
Santander
SCG
Schneider Electric
SGS
Sika
SINOPEC
SKANSKA
randstad
Smurfit Kappa
国家电投
SPIC
SOLVAY
Sompo Japan Nipponkoa
SOLAR
STATE GRID
CORPORATION OF CHINA
Statoil
stordenso
SUMITOMO CHEMICAL
SUMITOMO RUBBER GROUP
SWECO
syngenta
symrise
TAIHEIYO CEMENT
TATA
The New York Times Company
TITAN
TOSHIBA
Leading Innovation
TOTAL
COMMITTED TO BETTER ENERGY
TOYO TIRES
driven to perform
TOYOTA
Unilever
United Technologies
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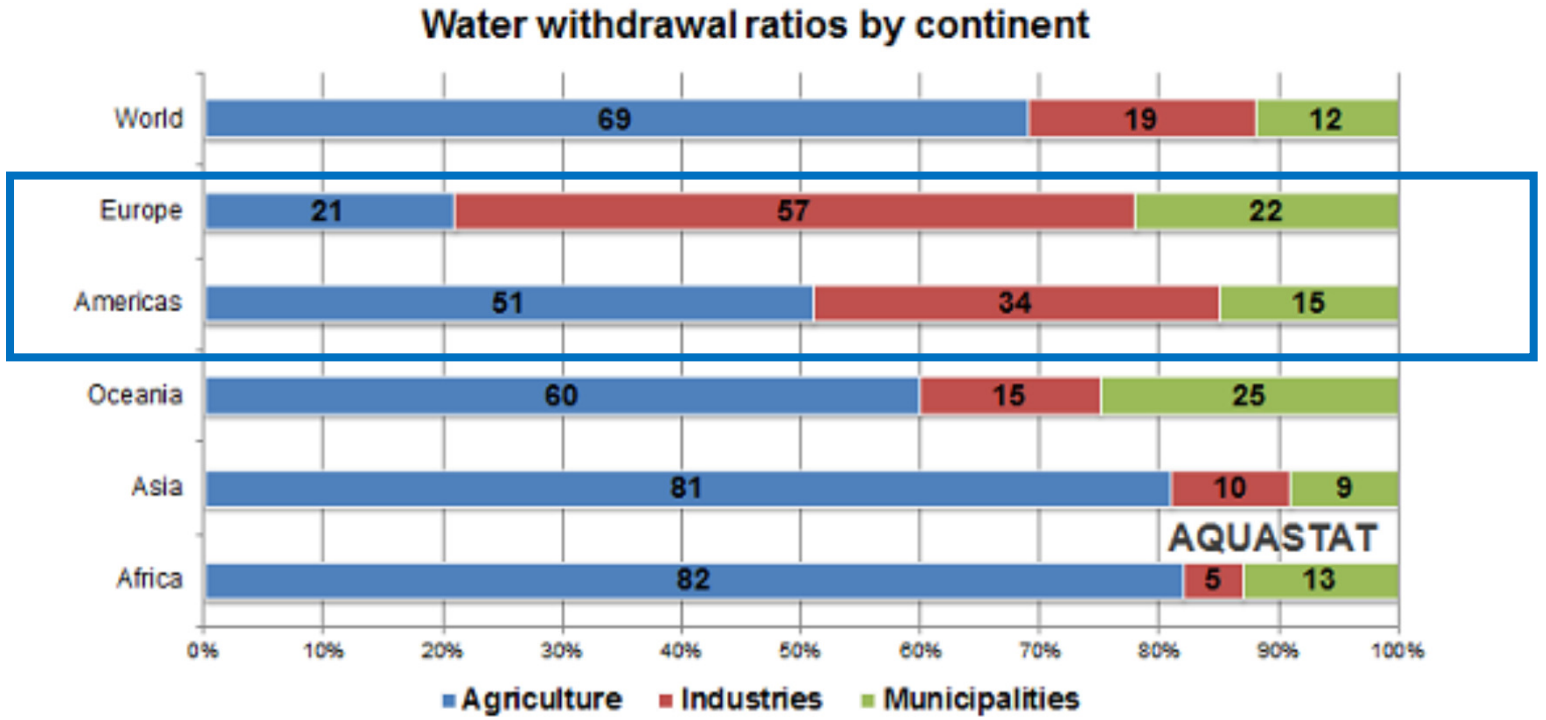
Walmart
Whirlpool
YARA
YOKOGAWA
YOKOHAMA

- **Launched** June 2017
- **Co-chairs** ARCADIS Design & Consultancy for natural and built assets, EDF
- **Working Group**:
  - Aditya Birla Group, Arcadis, BP, CEBDS, EDF, Engie, Godrej Industry, Heidelberg Cement, Nestlé, P&G, PepsiCo, Shell, Vale, Vedanta Resources

Need for circular water management



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Source: Aquastat

Need for circular water management

Industry is a major water user

Declining water quality

Impacts of climate change & growing population

Water users are inter-dependent

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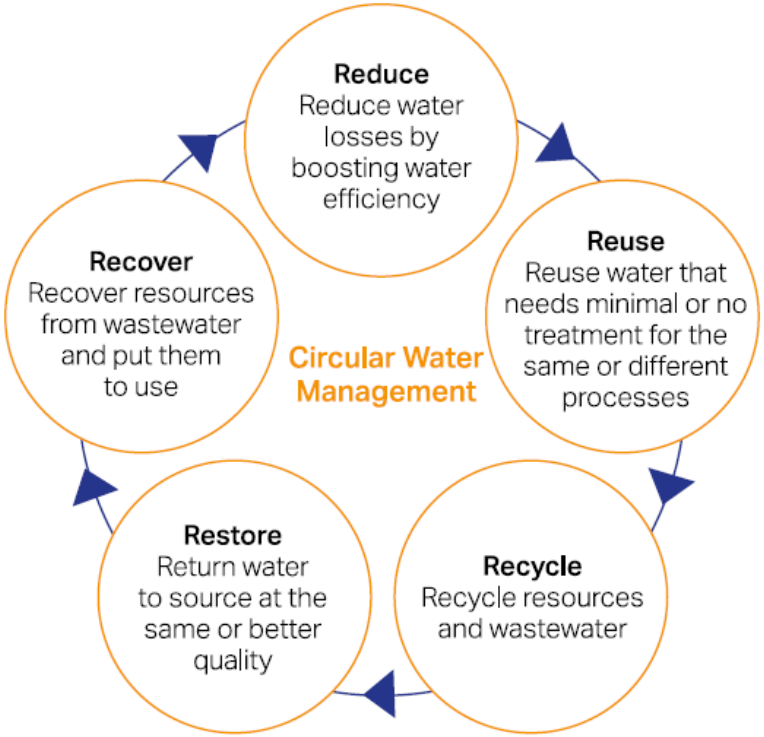
5Rs approach to circular water management



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Drivers of circular water management

Emerging regulatory frameworks

- Required regulatory **compliance** at site level (e.g. zero liquid discharge)
- Internal compliance (corporate level, site level)

Risks to water supplies (now and in the future)

- Securing **license to operate** at corporate and site levels
- Less dependency provides **opportunities for growth**
- **Reducing operating risks** via operational awareness

Costs and resources

- Circular water management has significant potential to **reduce costs**

Reputation

- Circular water management policies helps businesses **maintain reputation as responsible water users**

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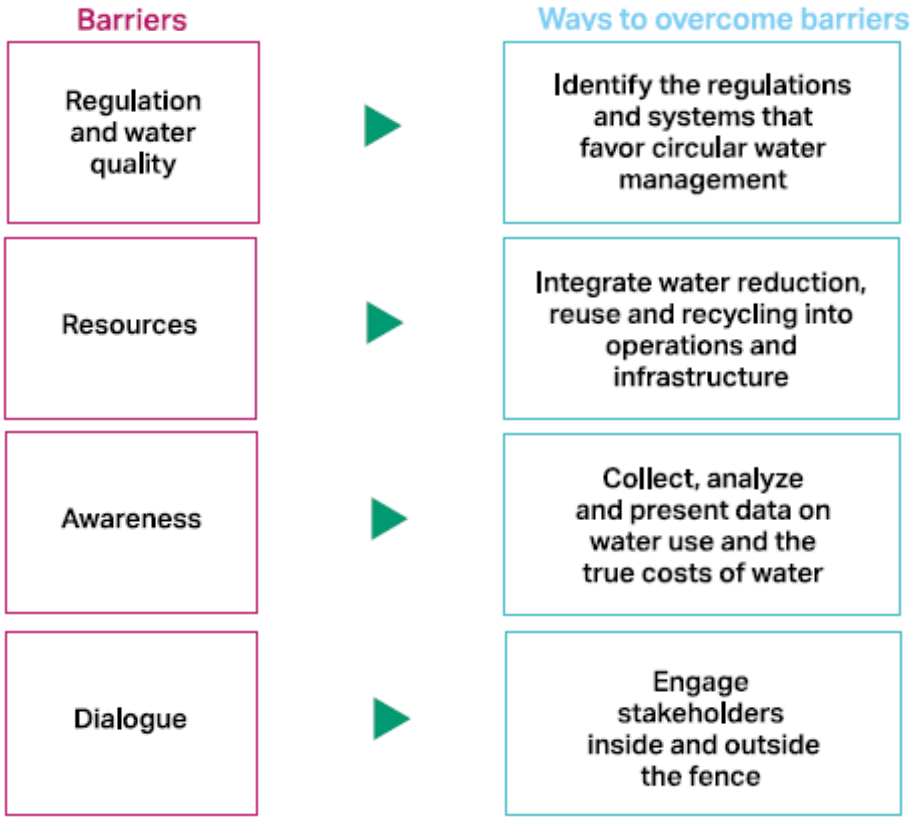
Overcoming barriers to circular water management



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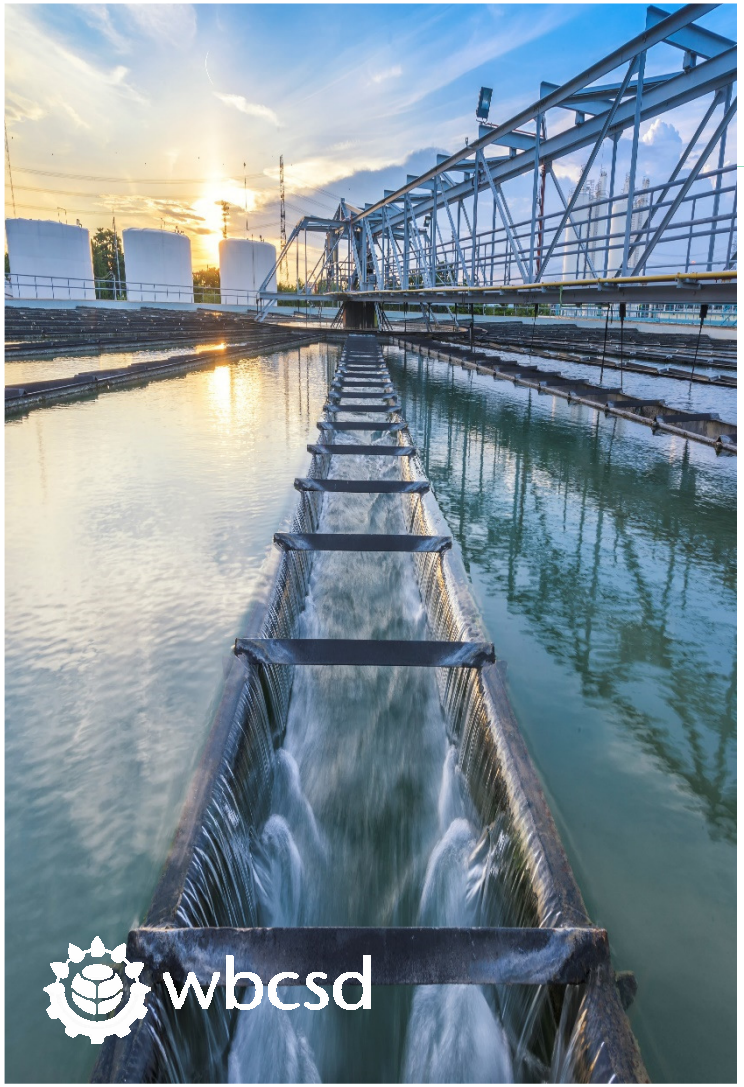

Business Guide to Circular Water Management – resources available

- Overview of regulatory frameworks
  - United Kingdom, The Netherlands, Spain, Poland, India, Australia, United States, United Arab Emirates
- Overview of tools
- Technologies
- Economics of circular water management
- Decision-trees & checklists
- Nine deep-dive case studies
- Adaptations to Brazilian and Indian context (forthcoming)

Available for download on the WBCSD website.

Case studies on Circular Water Management

Company	Industry	Region	Focus
BP	Oil & Gas	Australia	Water reduction and recycling in refining
EDF	Power & Utilities	Latin America	Rainwater harvesting for water reduction
ENGIE	Power & Utilities	Asia-Pacific	Recycling wastewater to lower demand on potable water sources
HeidelbergCement	Cement	Europe	From discharge to supply: water reuse at Antoing quarry
L'Oréal	Consumer Goods	Worldwide	Recycling and reuse of treated industrial wastewater in cosmetics operations
P&G	Consumer Goods	Asia	Water reduction and reuse in a P&G Beauty Care manufacturing facility
QGC (Shell subsidiary)	Oil & Gas	Australia	Reusing and recycling water in Australia
Shell	Oil & Gas	North America	Preserving fresh water through collaboration
Vale	Mining & Metals	Latin America	Robotic washer for mining equipment

Case study: Procter & Gamble (P&G)

Context

- Taicang plant in China is located in a water stressed area with demanding incoming water and wastewater permit requirements

Objectives and business case

- Ensure longevity of operations in the region, enable compliance with permit requirements and exceed P&G sustainability targets

Actions taken

- Step 1: complete a detailed water map for the site to monitor the direction of the project development and design.
- Step 2: **reduce the quantity of water used** at the site.
- Step 3: develop an effective way to **reuse water** back into utilities and core processes which would reduce the city water intake.

Results

- 60,000 m3 in annual water savings in total

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Case study available for download here.

Lessons learned

- Strong vision and business case are essential
- Sustainability must be part of the core criteria from the onset
- Detailed water map to drive right decision
- Integrated project team is a success factor
- Context of the local basin is important

Case study: BP in Kwinana (Australia)

Context

- Water availability is declining in Western Australia and the cost of water is increasing which impacts the refinery's margins

Objectives and business case

- Secure the future of the refinery by maintaining access to a suitable water source while lowering production costs and the use of water
- Collective action with industrial partners, the local water company and regulator to recycle municipal wastewater and reduce reliance on potable water

Actions taken

- Water Minimization program and focus on reducing potable water demand following the formation of a cross-functional team
- Collaboration with other stakeholders to develop an alternative source of water for industrial use

Results

- Total water use lowered by 42% and potable water use reduced by 93%, costs lowered by reducing the volume of wastewater

Case study available for download here.

Lessons learned

- Partnership approach at two levels drives efficiency
- Development of a cross-functional team and data collection are essential to succeed
- Agreement on financial terms between all parties is a key area of work

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Our plan

WATER

USE OF OUR PRODUCTS:

GOAL: Reduce by **half the water consumption** associated with the use of our products by the consumer by 2020.

STATUS: Our impact of water consumption by consumer use has **declined globally by around 7% since 2010.**

PROCESSES OF OUR FACTORIES:

TARGET: By 2020, water consumption in our global network of factories will not exceed 2008 levels, despite a significant increase in production volumes.

STATUS: **39% overall reduction in water** consumption per ton of production, from 2008 to 2017

One rinse is enough campaign
Compacted Products

Exemplo Campanha São Paulo - 2015

229 BILHÕES

Of liters – potential water reduction in Brazil


Oded Distel
Director, Israel New Tech & Eco Systems
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BUSINESS AS USUAL
IS NOT AN OPTION
Oded Distel
Ministry of Economy
Israel
NewTech

Israel NewTech

WATER - A National Priority

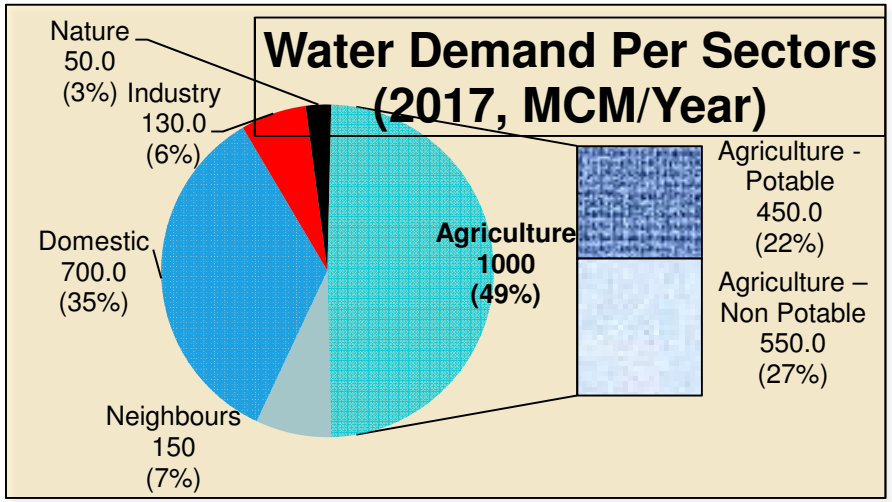
Israel NewTech

Water Decoupling

- **Natural water refill: 1170 MCM (per year)**
- **Water consumption: 2030 MCM (per year)**

- **Annual Shortage of over ~45%**

- **Daily Domestic Consumption Per Capita ~170 Liters**



Source: Israeli Water Authority

Chain of Treated Wastewater Supply

Procedure	Regulator
Sewage producer	Water Authority Ministry of Environmental Protection Ministry of Health
Wastewater Treatment Plant	Ministry of Environmental Protection Ministry of Health
Effluent reclaiming systems	Water Authority
Agricultural irrigation	Ministry of Health

Water Tariffs for the Agriculture Sector

- Reclaimed wastewater for unlimited irrigation is~ 0.33 $/m3
- Reclaimed wastewater for limited irrigation is~ 0.28 $/m3
- Potable water for Agriculture is~ 0.56 $/m3

Wastewater Treatment Plant (Shafdan) and the Pipeline to Negev

Sewage from the Greater Tel Aviv area – 125 MCM/Y

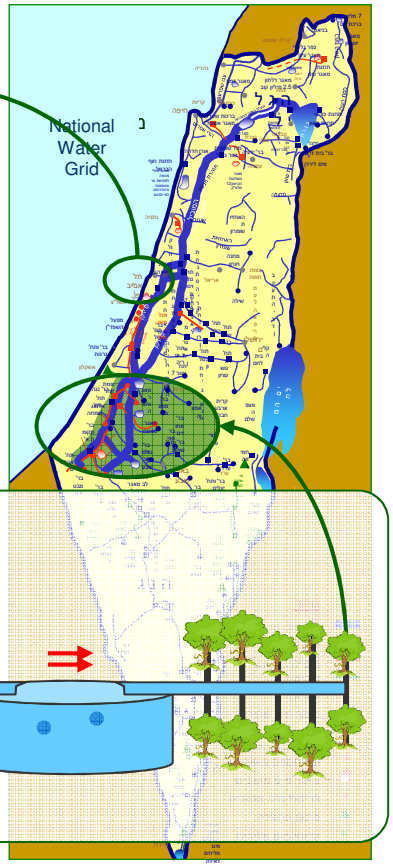
Large-scale WWTP – secondary treatment quality

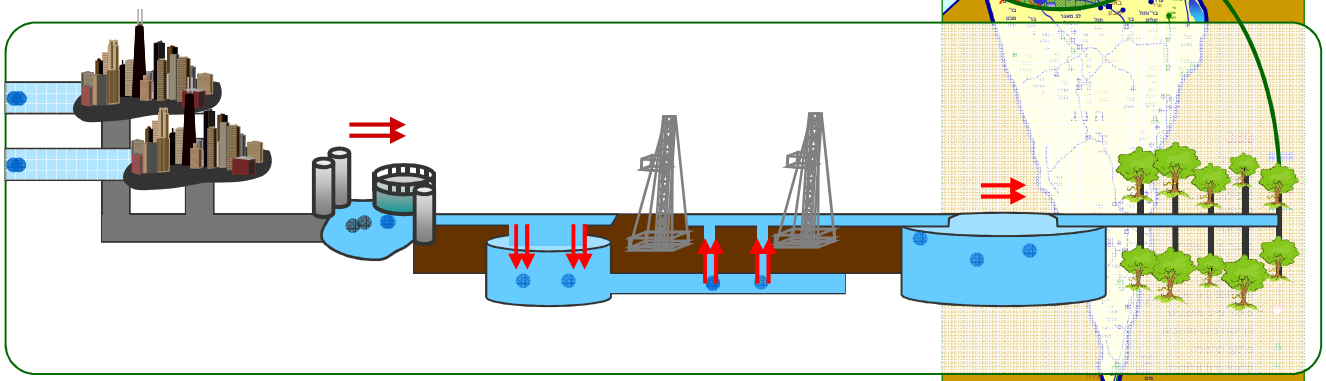
Six infiltration fields

Over 150 production and monitoring wells (quality permitted for "occasional drinking")

90km pipeline to Negev

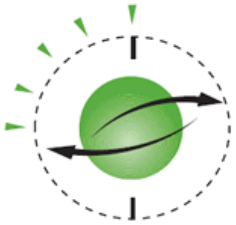
32 pumping stations, operational storages (0.51MCM) and seasonal storages (17.2 MCM)





Israel NewTech

Decentralized Sewage Treatment



EPC

Breakout discussions

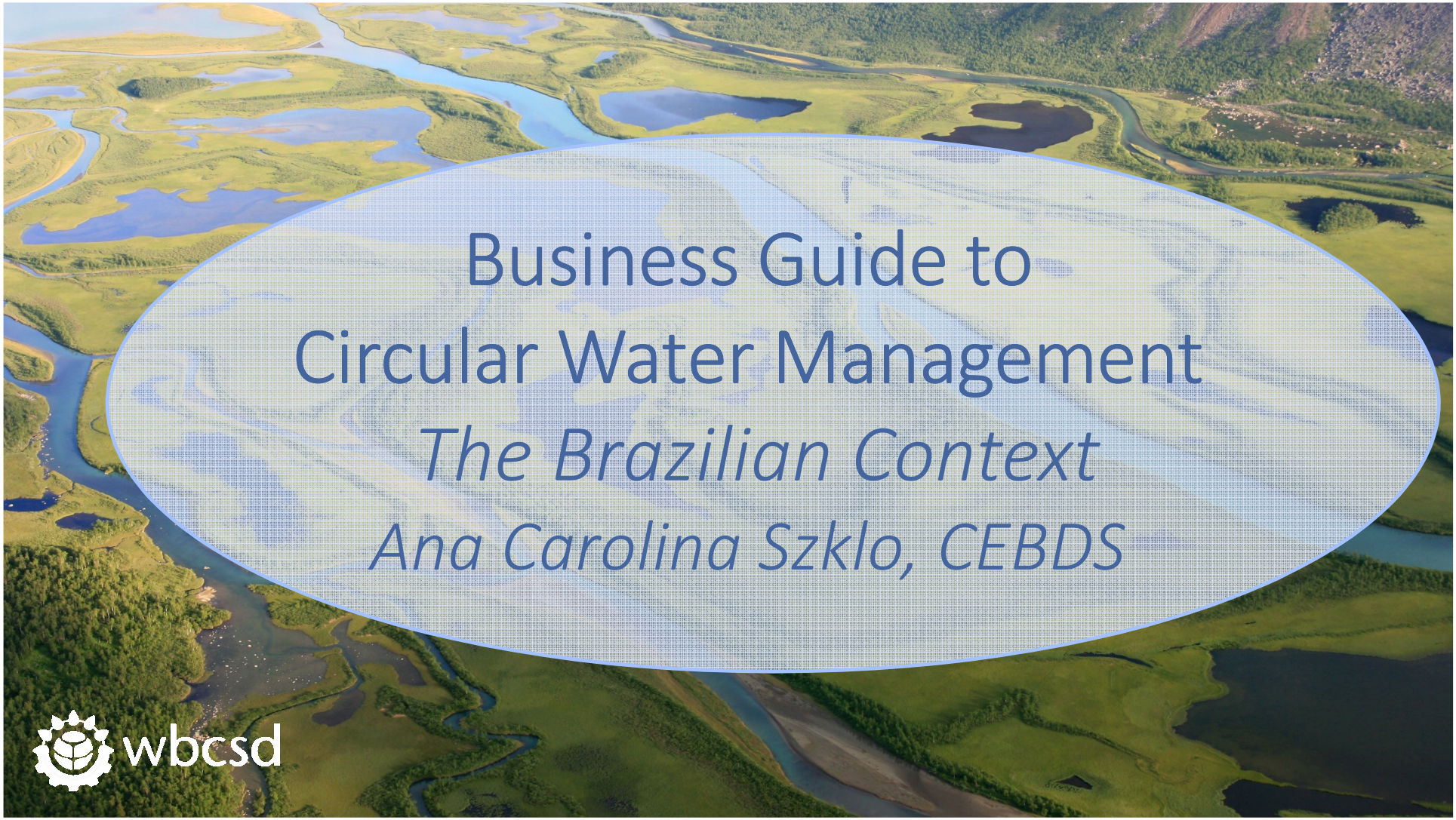
1. Trust between the **business, science and technology** sectors is essential for successful collaboration and scale-up. What are some effective ways to **generate this trust**?

2. What are some examples or characteristics of **conducive policies for circular water management** that should be advocated for?

3. **Valuation** is a key opportunity to bring more circular water management project into being. How can valuation principles be **mainstreamed into project planning**?

Agenda (Part 2)

Theme 2: Innovation & financing – how to get more solutions off the ground? (Coordinator: CEBDS)		
15:20 – 15:25	Welcome by chair/moderator	Karin Krchnak, Program manager, 2030 WRG
15:25 – 15:35	The Business Guide to Circular Water Management – the Brazilian context	Ana Carolina Szklo, Institutional Development Director, CEBDS
15:35 – 15:55	Insight presentations • Jennifer Sara, Director for the World Bank Group's Water Global Practice, World Bank • Orson Ledezma, VP & General Manager, Ecolab Brazil • Beatriz de Sá, Sustainability Coordinator, Heineken (TBC)	
15:55 – 16:05	Moderated discussion	Karin Krchnak, Program manager, 2030 WRG
16:05 – 16:10	Participants break out into discussion tables	CEBDS to coordinate, facilitators to place themselves on one of the discussion tables
16:10 – 16:40	Facilitated breakout discussion	Facilitators: • Torgny Holmgren, Executive Director, Stockholm International Water Institute (SIWI) • Diane D'Arras, President, IWA • Third facilitator TBC
16:40 – 16:50	Reporting back	Rapporteurs: Jorge Perón, FIRJAN; Daniella Soares, Elétrobras
16:50	Conclusions	Karin Krchnak, 2030 WRG & Nathália de Barros, Casa da Moeda


Business Guide to
Circular Water Management
The Brazilian Context
Ana Carolina Szklo, CEBDS
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ECONOMIA
CIRCULAR

Guia sobre Economia Circular da Água

PATROCINADORES

Braskem

Coca-Cola Brasil

TRANSPORTADORA OFICIAL

LATAM AIRLINES

O Guia

Tem como objetivo auxiliar as empresas brasileiras na avaliação da implementação de uma economia circular de água, trazendo essa visão para seus processos industriais, e identificando barreiras e oportunidades encontradas na implementação da abordagem 5R.

Os Riscos

RISCOS REPUTACIONAIS E SOCIAIS

Consumo em excesso, poluição e disputas públicas, no qual o uso da água pelas organizações passa a competir com as necessidades deste recurso por parte das comunidades locais, podendo ameaçar a licença para operar destas companhias. Também, o potencial fechamento de operações devido à situações irreversíveis de escassez hídrica tendem a causar impactos sociais severos à região de ocorrência..

RISCOS FÍSICOS / OPERACIONAIS

Menor grau de disponibilidade de água, menor grau de qualidade da água e excesso de água, por conta de eventos naturais extremos como enchentes ou quebra de barragens. Também, há maior chance de contaminação de corpos hídricos decorrentes de processos com alto grau de toxicidade (muitos processos utilizam água para diluir reagentes). Estes riscos podem levar até à paralisação permanente das operações de uma organização.

RISCOS REGULATÓRIOS

Aumento do preço da água - o custo da água pode sofrer aumento em função da perda da qualidade, da necessidade de captação de água cada vez mais distante por parte das empresas e do aumento no número de bacias hidrográficas que passem a cobrar pelo uso da água. Adicionalmente, as empresas poderão ficar expostas a novas penalidades, multas, regulações e processos penais se seu uso da água for de conflito com outros públicos de interesse.

RISCOS DE PLANEJAMENTO

Riscos de planejamento da estratégia do negócio sem uma percepção apurada dos riscos envolvidos. As organizações podem alocar investimentos em locais que possam apresentar situações futuras de escassez hídrica. Esta situação deverá ser cada vez mais prevista devido às mudanças climáticas, evitando-se implicações financeiras severas.

Os 5Rs

Reduzir a perda de água

Reutilizar a água com o mínimo ou nenhum tratamento em processos internos da empresa

Retirar recursos das águas residuais e coloca-lo em uso

Reciclagem de recursos e água residuais dentro e fora de processos das organizações

Devolver à água ao meio ambiente numa qualidade igual ou superior a que foi retirada

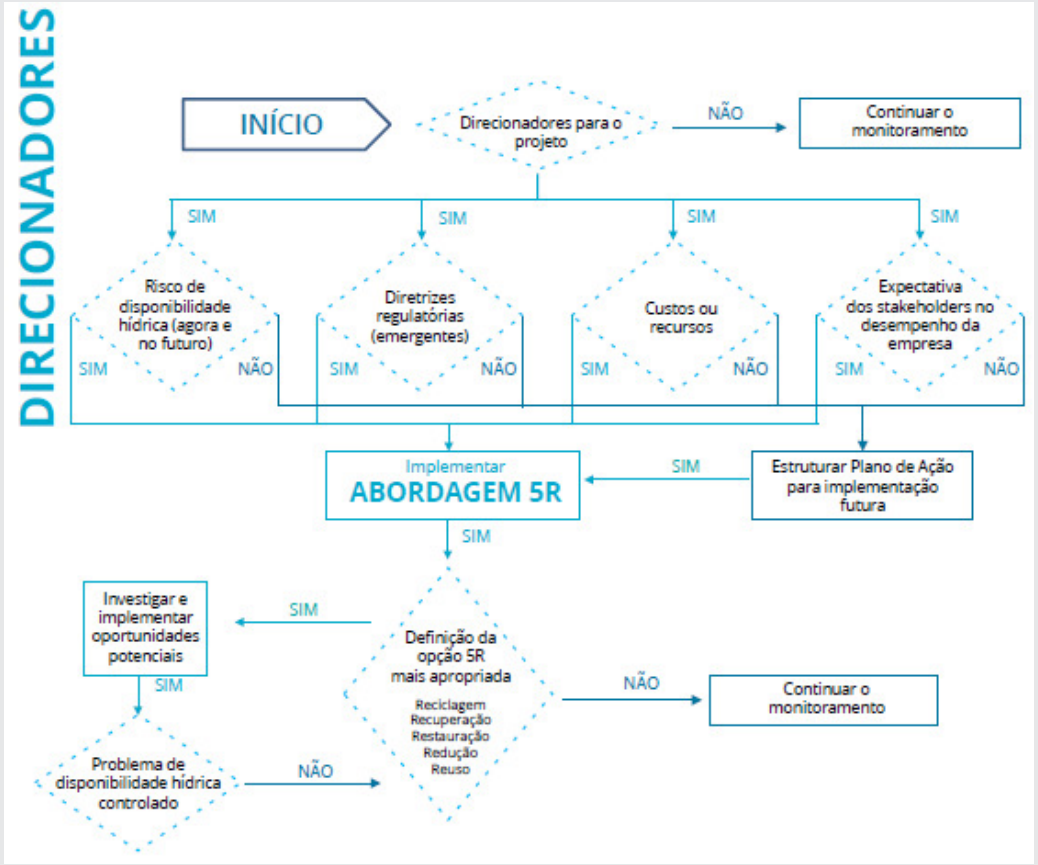
As ferramentas

Identificação e avaliação da situação local e global dos recursos hídricos	Ferramenta de Risco Hídrico (WWF); Global Water Tool (WBCSD); Aqueduct (WRI); Water Footprint Assessment Manual (WFN); Flood and Drought Management Tools (IWA/UNEP)
Contabilização do uso da água e identificação dos impactos relacionados	Local Water Tool (GEMI); ISO 14046 (water footprint) ISO 14040 (life cycle assesment); Water Footprint Assessment Manual (WFN); The Water Impact Index
Identificação de riscos e oportunidades de redução, reciclagem, reúso, recuperação e restauração	Local Water Tool (GEMI); The Water Impact Index; Ferramenta de Risco Hídrico (WWF); Global Water Tool (WBCSD); Aqueduct (WRI); Water Risk Monetizer
Determinação de planos de ação e de metas	Alliance for Water Stewardship; Aqua Gauge (Ceres); Local Water Tool (GEMI); CEO Water Mandate (ONU); The Water Impact Index
Monitoramento e comunicação de desempenho relacionado às ações estratégicas e compromissos	Alliance for Water Stewardship; CDP Water; Aqua Gauge (Ceres); GRI 303: Water (GRI); ISO 14046 (water footprint) ISO 14040 (life cycle assesment); CEO Water Mandate (ONU); Principles on Water Governance (OECD)

Tecnologias e os 5Rs

TECNOLOGIAS	REDUÇÃO	REÚSO	RECICLAGEM	RECUPERAÇÃO	RESTAURAÇÃO
Adsorção em Carvão Ativado		X	X		
Aplicações baseadas em Ultravioleta		X	X		
Aproveitamento de Água Pluvial	X				
Aproveitamento de Condensados de Processos		X			
Aquifer storage and recovery (ASR)					X
Artificial recharge (AR)					X
Biodigestor				X	
Coagulação		X			
Dessalinização	X		X		
Detector de Perda de Água	X				
Dióxido de Cloro		X			
Dispersador de Poeira	X				
Eletrodeionização		X	X		
Esgoto para Agricultura e Aquicultura		X			
Evaporação e Cristalização		X		X	
Evaporação por Concentração de Vinhaça (Agricultura)		X			

Avaliando a implementação



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Brazil
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WATER RISK MONETIZER

Circular Business Case for Water

Water Business Day
March 2018

Orson Ledezma

VP & General Manager Brazil

Water – Energy – Food Nexus

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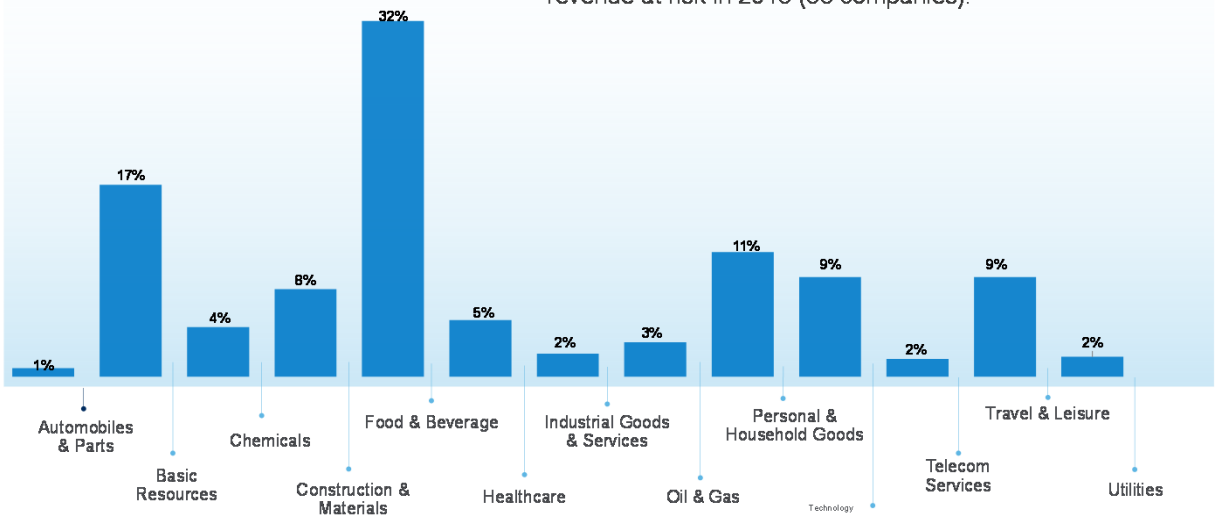
More companies reporting on financial implications of water stress

CDP Disclosed Revenue at Risk (2016)

202 companies publically disclosed to investors that water scarcity (declining availability and incoming water quality) threatens 1–6% of their annual revenue. The number of companies that disclosed revenue at risk in 2016 is over six times more than the number of companies that disclosed revenue at risk in 2015 (33 companies).



S&P Dow Jones Indices
A Division of S&P Global

Source: Trucost; CDP Water Disclosure Data, 2016

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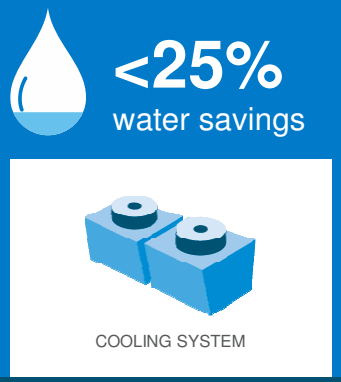
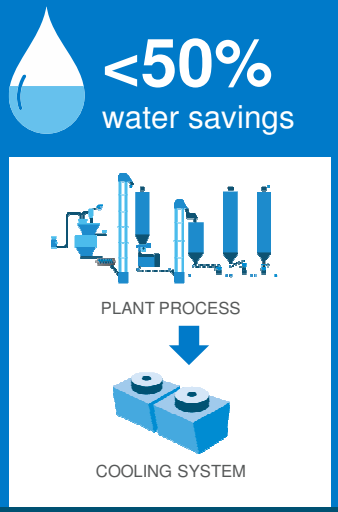
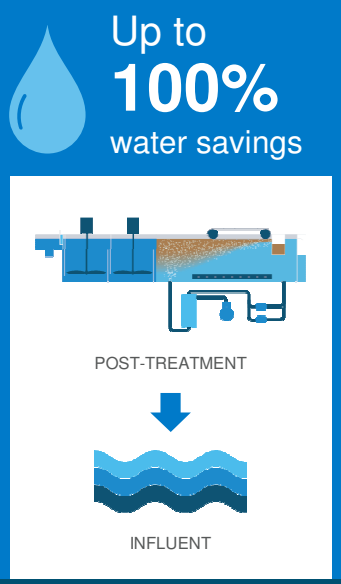
Integrate Circular Water Management







REDUCE
single application

REUSE
between applications

RECYCLE
post-treatment recycle

>100% water reduction goal achievement

ECOLAB®

Leveraging data to inform business decisions

WRM Application and Analytics

WATER RISK MONETIZER

- **Incoming water risks:** monetary value of the impacts of incoming water use on human health and ecosystems and the future costs of incoming water treatment
- **Outgoing water risk:** monetary value of the impacts of outgoing water pollution on human health and ecosystems and the future costs of water treatment
- **Potential revenue at risk:** monetary value of the impacts of water availability based on water required to do business

Actionable information

Informing Business Decisions

- **Incorporate** a risk-adjusted cost of water and potential revenue loss into analysis
- **Make the case** for proactive water management strategies
- **Identify** operations/locations at greatest risk
- **Monetize** rate of return for water management improvement projects
- **Select** where and how to increase production or meet demand in new regions

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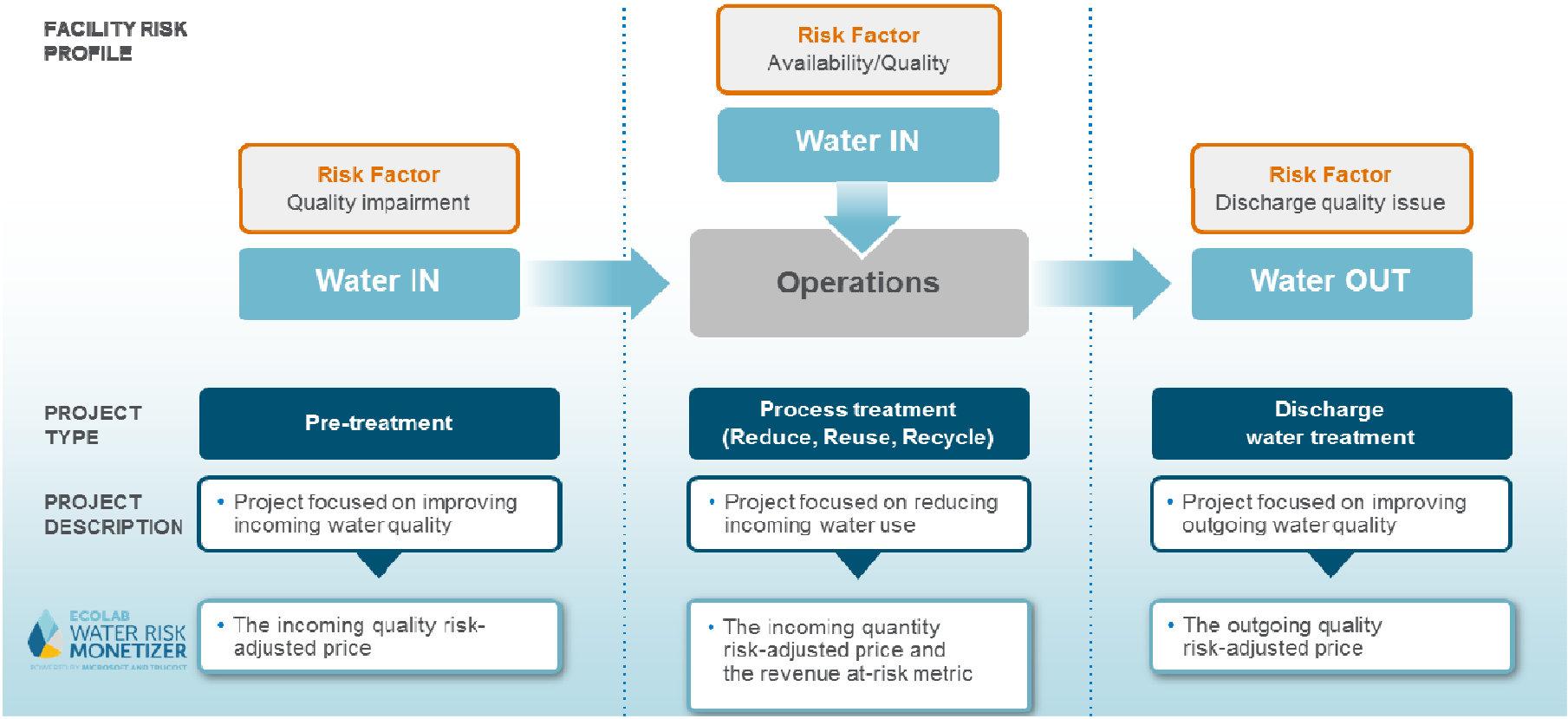
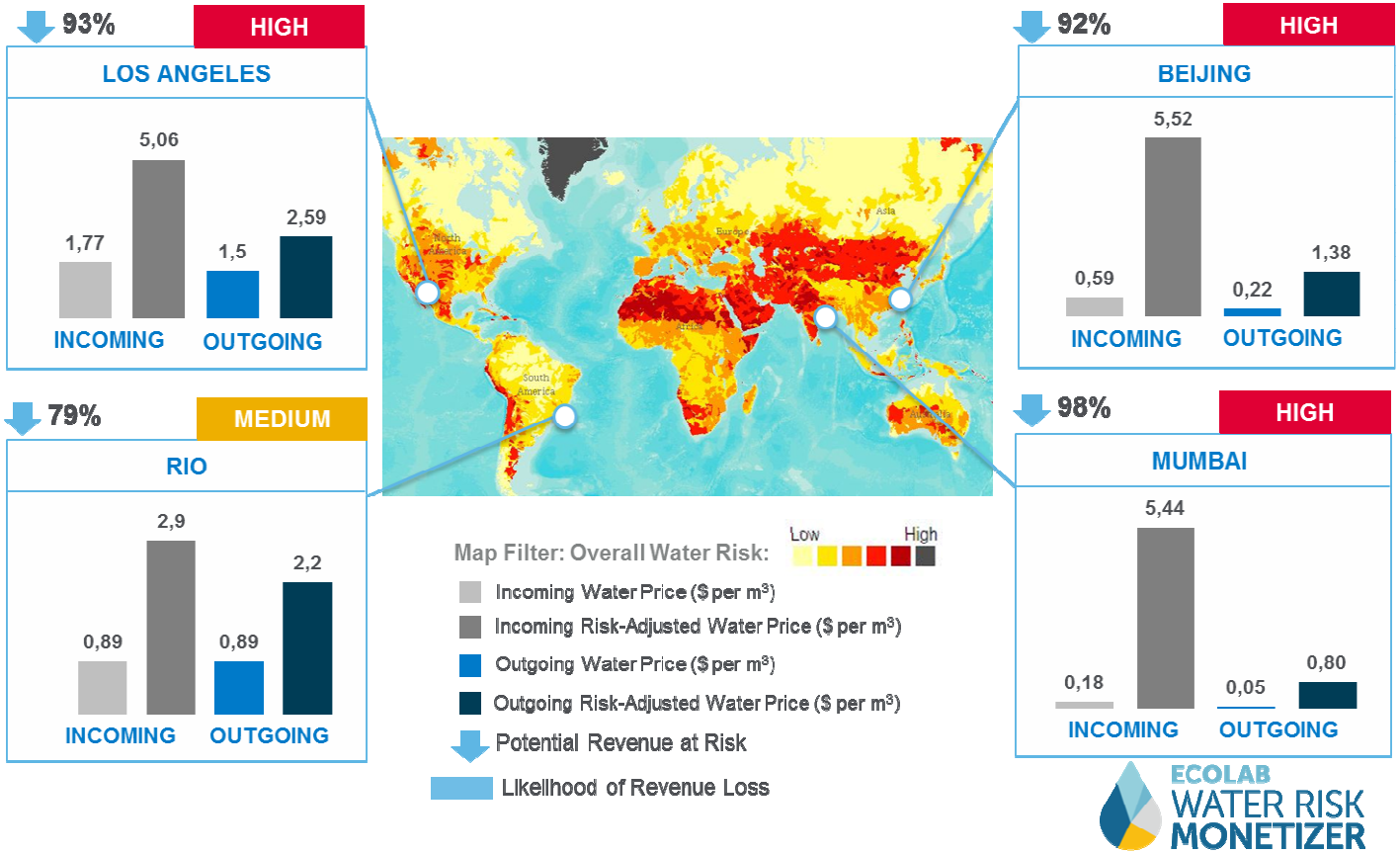
Application of WRM risk-adjusted prices

Linking water risk metrics to business decision-making



Application of WRM risk-adjusted prices

Linking water risk metrics to business decision-making



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THANK YOU!
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Beatriz de Sá
Sustainability Coordinator, Heineken
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Breakout discussions

1. How important of a gap is **financing** to the scale-up of circular water management projects? How can **banks and investors** help us move towards circular water management?

2. Considering your company's needs for water and associated risks and opportunities, what kind of **solutions** you expect to be developed or to receive investments to gain scale? If you had the budget **what would you invest in**?

3. How can we integrate more the water systems and **multiple use of water** approach in order to go circular and improve water security?