The Circular Business Case for Water

CEBDS & WBCSD

Brasilia, 18 March 2018

Welcome!
### Agenda (Part 1)

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
<th>Speaker/Coordinator</th>
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<tbody>
<tr>
<td>14:00 – 14:05</td>
<td>Welcome by chair/moderator</td>
<td>Nathália de Barros, Environmental Manager, Casa da Moeda</td>
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<tr>
<td>14:05 – 14:15</td>
<td>The Business Guide to Circular Water Management</td>
<td>Sara Traubel, Manager Water, WBCSD</td>
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<td>14:15 – 14:35</td>
<td>Insight presentations</td>
<td>Pierre Victoria, Senior VP Sustainable Development, Veolia</td>
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<td>Antonio Calcagnotto, VP Public Affairs &amp; Sustainability, Unilever Brazil</td>
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<td>Oded Distel, Director, Israel New Tech &amp; Eco Systems</td>
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<td>14:35 – 14:45</td>
<td>Moderated discussion</td>
<td>Nathália de Barros, Environmental Manager, Casa da Moeda</td>
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<td>14:45 – 14:50</td>
<td>Participants break out into discussion tables</td>
<td>WBCSD to coordinate, facilitators to place themselves by one of three discussion tables</td>
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<td>14:50 – 15:20</td>
<td>Facilitated breakout discussion</td>
<td>Facilitators:</td>
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<td></td>
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<td>- Diana Rojas, Senior Program Officer, Global Program Water SDC</td>
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<td>- Pascale Guiffant, Board member, Toilet Board Coalition</td>
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<td>- Rodrigo Simonato, FEMSA</td>
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Business Guide to Circular Water Management

Spotlight on reduce, reuse, recycle

Sara Traubel, WBCSD
Launched June 2017

Co-chairs

Working Group:
Need for circular water management

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
5Rs approach to circular water management

- **Reduce**: Reduce water losses by boosting water efficiency
- **Recover**: Recover resources from wastewater and put them to use
- **Reuse**: Reuse water that needs minimal or no treatment for the same or different processes
- **Recycle**: Recycle resources and wastewater
- **Restore**: Return water to source at the same or better quality
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
Overcoming barriers to circular water management

**Barriers**

- Regulation and water quality
- Resources
- Awareness
- Dialogue

**Ways to overcome barriers**

- Identify the regulations and systems that favor circular water management
- Integrate water reduction, reuse and recycling into operations and infrastructure
- Collect, analyze and present data on water use and the true costs of water
- Engage stakeholders inside and outside the fence
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

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

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

➢ Objectives and business case
  o Ensure longevity of operations in the region, enable compliance with permit requirements and exceed P&G sustainability targets

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

➢ Results
  o 60,000 m3 in annual water savings in total

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

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

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

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

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

Case study available for download here.
Thank you

Questions / comments:
Traubel@wbcsd.org
Pierre Victoria
Senior VP Sustainable Development
Veolia
**Our plan**

**UNILEVER SUSTAINABLE LIVING PLAN**

**IMPROVING HEALTH AND WELL-BEING FOR MORE THAN 1 BILLION**
By 2020 we will help more than a billion people take action to improve their health and well-being.

**REDUCING ENVIRONMENTAL IMPACT BY 1/2**
By 2030 our goal is to halve the environmental footprint of the making and use of our products as we grow our business.

**ENHANCING LIVELIHOODS FOR MILLIONS**
By 2020 we will enhance the livelihoods of millions of people as we grow our business.

---

**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

OMO Brasil
Página curtida - 17 de março de 2015

Queremos mudar o mundo e vamos começar por aquilo que entendemos bem.
Quer participar desta mudança com a gente?
#UnExaigueBasta — com Geza Ferreira.

OMO Brasil Agradecemos pelo carinho e confiança que tem com a nossa marca. Lembre
Curtir Respondê 2 a
1 resposta

OMO Brasil Agradecemos pelo carinho
Escreva um comentário.

NÃO VAMOS DEIXAR A ÁGUA SER UM SONHO PARA AS CRIANÇAS

15% DE AUMENTO DE VENDAS

229 BILHÕES
Of liters – potential water reduction in Brazil
Oded Distel
Director, Israel New Tech & Eco Systems
BUSINESS AS USUAL IS NOT AN OPTION

Oded Distel
WATER - A National Priority
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**
- Sewage producer
- Wastewater Treatment Plant
- Effluent reclaiming systems
- Agricultural irrigation

**Regulator**
- Water Authority
- Ministry of Environmental Protection
- 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 (0.51 MCM) and seasonal storages (17.2 MCM)
Decentralized Sewage Treatment
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)

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
<th>Presenter/Notes</th>
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<tbody>
<tr>
<td>15:20 – 15:25</td>
<td>Welcome by chair/moderator</td>
<td>Karin Krchnak, Program manager, 2030 WRG</td>
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<tr>
<td></td>
<td></td>
<td>• Orson Ledezma, VP &amp; General Manager, Ecolab Brazil</td>
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<td></td>
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<td>• Beatriz de Sá, Sustainability Coordinator, Heineken (TBC)</td>
</tr>
<tr>
<td>15:55 – 16:05</td>
<td>Moderated discussion</td>
<td>Karin Krchnak, Program manager, 2030 WRG</td>
</tr>
<tr>
<td>16:05 – 16:10</td>
<td>Participants break out into discussion tables</td>
<td>CEBDS to coordinate, facilitators to place themselves on one of the discussion tables</td>
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<tr>
<td>16:10 – 16:40</td>
<td>Facilitated breakout discussion</td>
<td>Facilitators:</td>
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<tr>
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<td>• Torgny Holmgren, Executive Director, Stockholm International Water Institute (SIWI)</td>
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<td></td>
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<td>• Diane D'Arras, President, IWA</td>
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<td>• Third facilitator TBC</td>
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<tr>
<td>16:40 – 16:50</td>
<td>Reporting back</td>
<td>Rapporteurs: Jorge Perón, FIRJAN; Daniella Soares, Eléctrobras</td>
</tr>
<tr>
<td>16:50</td>
<td>Conclusions</td>
<td>Karin Krchnak, 2030 WRG &amp; Nathália de Barros, Casa da Moeda</td>
</tr>
</tbody>
</table>
Business Guide to Circular Water Management
The Brazilian Context
Ana Carolina Szklo, CEBDS
Guia sobre Economia Circular da Água
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
- Retirar recursos das águas residuais e colocá-lo em uso
- Recuperação de recursos
- Reutilizar a água com o mínimo ou nenhum tratamento em processos internos da empresa
- 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

<table>
<thead>
<tr>
<th>Identificação e avaliação da situação local e global dos recursos hídricos</th>
<th>Ferramenta de Risco Hídrico (WWF)</th>
<th>Global Water Tool (WBCSD)</th>
<th>Aqueduct (WRI)</th>
<th>Water Footprint Assessment Manual (WFN)</th>
<th>Flood and Drought Management Tools (IWA/UNEP)</th>
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<tbody>
<tr>
<td>Contabilização do uso da água e identificação dos impactos relacionados</td>
<td>Local Water Tool (GEMI)</td>
<td>ISO 14046 (water footprint)</td>
<td>Water Footprint Assessment Manual (WFN)</td>
<td>The Water Impact Index</td>
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<tr>
<td>Identificação de riscos e oportunidades de redução, reciclagem, reuso, recuperação e restauração</td>
<td>Local Water Tool (GEMI)</td>
<td>The Water Impact Index</td>
<td>Ferramenta de Risco Hídrico (WWF)</td>
<td>Global Water Tool (WBCSD)</td>
<td>Aqueduct (WRI)</td>
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<td>Determinação de planos de ação e de metas</td>
<td>Alliance for Water Stewardship</td>
<td>Aqua Gauge (Ceres)</td>
<td>Local Water Tool (GEMI)</td>
<td>CEO Water Mandate (ONU)</td>
<td>The Water Impact Index</td>
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<td>Monitoramento e comunicação de desempenho relacionado às ações estratégicas e compromissos</td>
<td>Alliance for Water Stewardship</td>
<td>CDP Water</td>
<td>Aqua Gauge (Ceres)</td>
<td>GRI 303: Water (GRI)</td>
<td>ISO 14046 (water footprint)</td>
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## Tecnologias e os 5Rs

<table>
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<th>TECNOLOGIAS</th>
<th>REDUÇÃO</th>
<th>REU$$</th>
<th>RECICLAGEM</th>
<th>RECUPERAÇÃO</th>
<th>RESTAURAÇÃO</th>
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<td>Aplicações baseadas em Ultravioleta</td>
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<td>Aproveitamento de Água Pluvial</td>
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<td>Aproveitamento de Condensados de Processos</td>
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<td>Aquifer storage and recovery (ASR)</td>
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<td>Artificial recharge (AR)</td>
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<td>Biodigestor</td>
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<td>Coagulação</td>
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<td>Dessalinização</td>
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<td>Detector de Perda de Água</td>
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<td>Dióxido de Cloro</td>
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<td>Dispersador de Poeira</td>
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<td>Eletrodeionização</td>
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<td>Esgoto para Agricultura e Aquicultura</td>
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Avaliando a implementação
Jennifer Sara
Director for the World Bank Group's Water Global Practice, World Bank
Water – Energy – Food Nexus

50% MORE ENERGY

35% MORE FOOD

40% MORE WATER
More companies reporting on financial implications of water stress

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).
Integrate Circular Water Management

- **REDUCE**: single application
- **REUSE**: between applications
- **RECYCLE**: post-treatment recycle

- **COOLING SYSTEM**
- **PLANT PROCESS**
- **POST-TREATMENT**

- <25% water savings
- <50% water savings
- Up to 100% water savings

>100% water reduction goal achievement

ECOLAB
Leveraging data to inform business decisions

WRM Application and Analytics

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

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

Actionable information
Application of WRM risk-adjusted prices
Linking water risk metrics to business decision-making

FACILITY RISK PROFILE

Risk Factor
Availability/Quality

Risk Factor
Quality impairment

Water IN

Operations

Risk Factor
Discharge quality issue

Water IN

Process treatment
(Reduce, Reuse, Recycle)

Pre-treatment

• Project focused on improving incoming water quality

• The incoming quality risk-adjusted price

• Project focused on reducing incoming water use

Discharge water treatment

• Project focused on improving outgoing water quality

• The outgoing quality risk-adjusted price

PROJECT TYPE

PROJECT DESCRIPTION

ECOLAB WATER RISK MONETIZER

Application of WRM risk-adjusted prices
Linking water risk metrics to business decision-making

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Operations

Risk Factor
Discharge quality issue

Water IN

Process treatment
(Reduce, Reuse, Recycle)

Pre-treatment

• Project focused on improving incoming water quality

• The incoming quality risk-adjusted price

• Project focused on reducing incoming water use

Discharge water treatment

• Project focused on improving outgoing water quality

• The outgoing quality risk-adjusted price

PROJECT TYPE

PROJECT DESCRIPTION

ECOLAB WATER RISK MONETIZER

Application of WRM risk-adjusted prices
Linking water risk metrics to business decision-making

FACILITY RISK PROFILE

Risk Factor
Availability/Quality

Risk Factor
Quality impairment

Water IN

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Map Filter: Overall Water Risk:
- Incoming Water Price ($ per m³)
- Incoming Risk-Adjusted Water Price ($ per m³)
- Outgoing Water Price ($ per m³)
- Outgoing Risk-Adjusted Water Price ($ per m³)
- Potential Revenue at Risk
- Likelihood of Revenue Loss

ECOLAB
THANK YOU!

orson.ledezma@ecolab.com
Beatriz de Sá
Sustainability Coordinator, Heineken
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?