EBOOK

6 STEPS TO REDUCE THE WATER FOOTPRINT of your Food & Beverage plant

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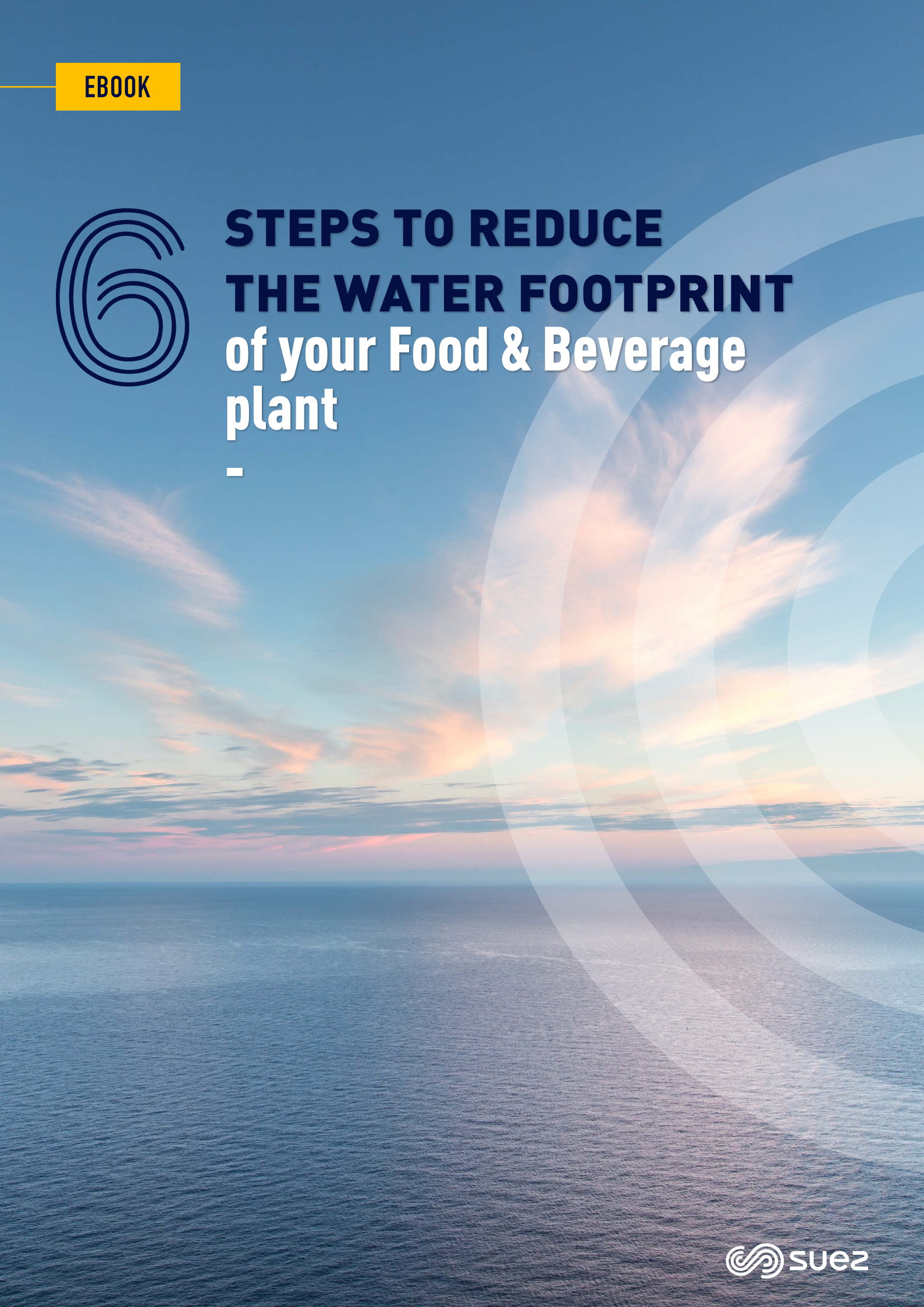


SUEZ

Water is becoming a scarcer resource by the day, and climate change also has an impact on water quality in many regions. In this double-threat context, reducing the water footprint of a Food & Beverage plant becomes one of the most challenging projects for manufacturers that wish to reduce their production's environmental impact.

Are you planning on working on your water footprint's optimization? Adopting a real holistic approach on the issue can have other benefits for your plant, such as…

- **Complying with national water regulations** and recommendations
- **Solving issues concerning resource availability** and water supply management
- **Reducing the plant's costs** in a meaningful way
- **Increasing the plant's operational efficiency**
- **Reducing competition for water supply** between local populations and plants

In this guide, discover the six key steps for reducing your Food & Beverage plant's water footprint, without affecting your daily operations.

1. Map your company's water flows
2. Optimise your water supply sources
3. Optimise the way water resources are used at your plant
4. Increase employee awareness of water consumption best practices
5. Apply advanced water treatment chemical programmes to enhance your utilities' performance
6. Design an efficient effluent treatment and recycling system

1 MAP YOUR COMPANY'S WATER FLOWS

Before setting up any action plan, Food & Beverage manufacturers need to know precisely how they currently use water at their plant. To do so, you need to draw up an elaborate map of your plant's water flows.

The goal is to identify each point where water is used on the plant, and analyse:

- **The quantity of water** consumed and its supply source
- **The water quality** needed, and its relevance to its use (process, ingredient water, utility)
- **The state of the water network** to identify **potential leaks and wasted water flows**

At the end of this analysis, you will have **a comprehensive map of the plant**, pointing out the different water consumption points, volumes and quality. Afterwards, the plant's real consumption will be compared to the theoretical consumptions and Best Available Technologies standards. By doing so, you will be able to determine and prioritise the actions that must subsequently be taken.

WATCH OUT FOR LEAKS AND WATER WASTE

Fixing and preventing leaks is **one of the quickest ways to reduce the water footprint of a Food & Beverage plant**. Wasted water in the plant's water lifecycle can be easily spotted, both through a comprehensive analysis of your water bills, precise monitoring of water consumption and *in situ* detection measures. Leaks can occur from the water catchment itself, and throughout the whole water cycle.

"Map your factory's water flows can be a great start to apply the ISO 14046 standard to your process. In fact, this International framework, which many Food & Beverage players are interested in to meet their sustainability goals, is based on Life Cycle Assessment (LCA) of water-related environmental impacts".

Florian Lagleize – Industry & Global Key Account - SUEZ Consulting

2 | OPTIMISE YOUR WATER SUPPLY SOURCES

The next step is to determine whether your water supply sources are well-managed and could be improved. In this regard, your goal is to **prioritise water supply sources and catchments**, to find which will consume less water without affecting the plant's operations.

To reduce your plant's water footprint, try to multiply and diversify water supply sources from:

- **Raw water intake**
  (rivers, groundwater, seawater or rainwater)
- **Municipal networks**
- **Raw water networks**

For this step, you will also need to take into account local pressure on the water resource. Supplying your plant with the right water sources, at the right time, with the right water quality: that is your challenge.

PLAN AHEAD FOR PERIODS OF HYDRIC STRESS

Food & Beverage plants often face times when they have to monitor their water consumption even more closely. For instance, during the summer season, some regions decide to prioritise access to municipal water for local populations instead of industry.

Make sure you define a water strategy that can help you face these periods of high hydric stress. For instance, you can:

- **Define a rainwater storage strategy**
  that can be used during high stress times
- **Evaluate an alternative water supply source**,
  if possible
- **Team up with other local industries** with seasonal business, which might not need all their water resources at a given time.

3 | OPTIMISE THE WAY WATER RESOURCES ARE USED AT YOUR PLANT

Reducing a Food & Beverage plant's water footprint does not only involve lowering the quantity of water used, but also **selecting the right water quality for each specific use** in your process and utilities. In fact, drinking water may not be necessary for every use at your plant.

Manufacturers can optimise each of their water uses by:

- **Identifying and managing water loss,** leakage and inefficiency
- **Improving cleaning process** efficiency
- **Optimising the water consumption and efficiency of the plant's utilities** such as cooling towers, boilers, membrane systems, heat exchangers and closed loops (e.g. for indirect cooling or heating)
- **Reusing untreated water for general use** in the factory, e.g. for collecting rainwater, cooling water for pump seal, bottle washer waste, backwash from carbon filters and multimedia, and reusing them for fire hydrants, cooling towers make-up water, floor washing, watering green spaces, etc.

Many Food & Beverage plants don't realize how much water they can save, just by analyzing which water quality they use in their process and utilities. Taking the various water qualities needed on the plant into account is a crucial step to designing an efficient water strategy, and a quick way to spot easy-to-make improvements.»

Salvatore Albano – VP Food & Beverage Market - SUEZ Group

4 INCREASE EMPLOYEE AWARENESS OF WATER CONSUMPTION BEST PRACTICES

Optimising a Food & Beverage plant not only involves defining the right water strategy and adopting the right technologies, but also **implementing water consumption best practices every day**. In this regard, your employees must support your sustainability strategy at all times.

Make sure you increase employee awareness of these issues by:

- **Helping them to understand water waste** and the importance of using the right water quality for the right use
- **Helping them to monitor water consumption and sectorization** at all times
- **Implementing KPIs & performance dashboards** through workshops

DIGITAL SOLUTIONS TO HELP YOUR EMPLOYEES MONITOR WATER FLOWS

By linking your equipment to sensors, controllers and digital monitoring solutions, you can save even more water at your plant. Such digital solutions can help you:

- Collect chemical, operational and analytical data from the plant
- Monitor the performance of your assets and processes 24/7 and in real time
- Improve the way you use water resources and chemical treatments on a daily basis

Take your plant's global performance to the next level and adopt the right proactive and corrective actions at the right time, to save even more resources and increase operational efficiency.

5 APPLY ADVANCED WATER TREATMENT CHEMICAL PROGRAMMES TO ENHANCE YOUR UTILITIES' PERFORMANCES

Reducing your plant's water footprint also depends on the way your utilities work. In fact, **equipment that doesn't operate properly can increase water consumption**, the lifetime of the utility asset, and ultimately even affect the quality of the final product.
Think about an advanced chemical treatment programme that can enhance the performance of your utility equipment. Typical chemical programmes include:

- **Corrosion inhibitors** which prevent early corrosion of the system's metallurgy
- **Scaling and deposit control** which prevents the formation of deposits (e.g. mineral deposits) and, in turn, reduces heat transfer at system interfaces
- **Microbiological growth agents,** such as oxidizing and non-oxidizing biocides, which prevent waterborne disease, biofouling, and inorganic and organic deposit formation
- **Chemical programmes for membrane systems** to improve cleaning in place frequency, reduce scale potential (e.g. silica precipitation), remove chlorine from water (to protect the membranes) and prevent fouling caused by bacteria naturally present in the water

When your utility equipment operates properly, water reduction can be significantly reduced and operational efficiency can be considerably improved.

Want to know more about water treatment chemicals, such as anti-corrosion, anti-scaling, biocides and wastewater treatments to enhance water reuse at your plant? Read our blog post "How to use water treatment chemicals to reduce your Food & Beverage plant's water footprint"

READ THE POST

6 DESIGN AN EFFICIENT EFFLUENT TREATMENT AND RECYCLING SYSTEM

To reduce your plant's water footprint still further, you will, sooner or later, have to **treat your factory water effluents and make them suitable for multiple reuse applications** as non-food contact water.

Reused water can be used for many applications, including:

- CIP (cleaning in place) first rinse
- CIP chemical dilution
- Bottle washing
- Cooling tower or boiler make-up water
- Package washing and rinsing
- Floor washing
- Filters backwash
- Crate and vehicle washing
- Irrigation
- Firefighting
- Dust suppression

WHERE CAN YOU FIND FUNDING FOR YOUR WATER REUSE SYSTEMS?

Check for national and regional organisations that could help you fund your water reuse or recycling project. In France, for example, "Agences de l'Eau" can help you meet the costs of some of these solutions. Reducing your plant's water footprint can also have a more or less direct impact on your carbon footprint. If this is the case, your project could also be funded through carbon regulations.

To significantly reduce their plants' water footprint, Food & Beverage manufacturers must take a global approach and perform multi-criteria analysis into the way their utilities and employees use water on a daily basis.

Using these six steps, you will be able to analyse your current water flows, find problematic points in your water cycle, select the right water resource for the right use, and think about smart techniques to reuse or recycle water to make further reductions.

The real challenge of reducing your water footprint lies in your ability to conduct financial analysis to evaluate estimated gains (in terms of water and energy savings, costs and operational efficiency), and assess the potential risks for production continuity.

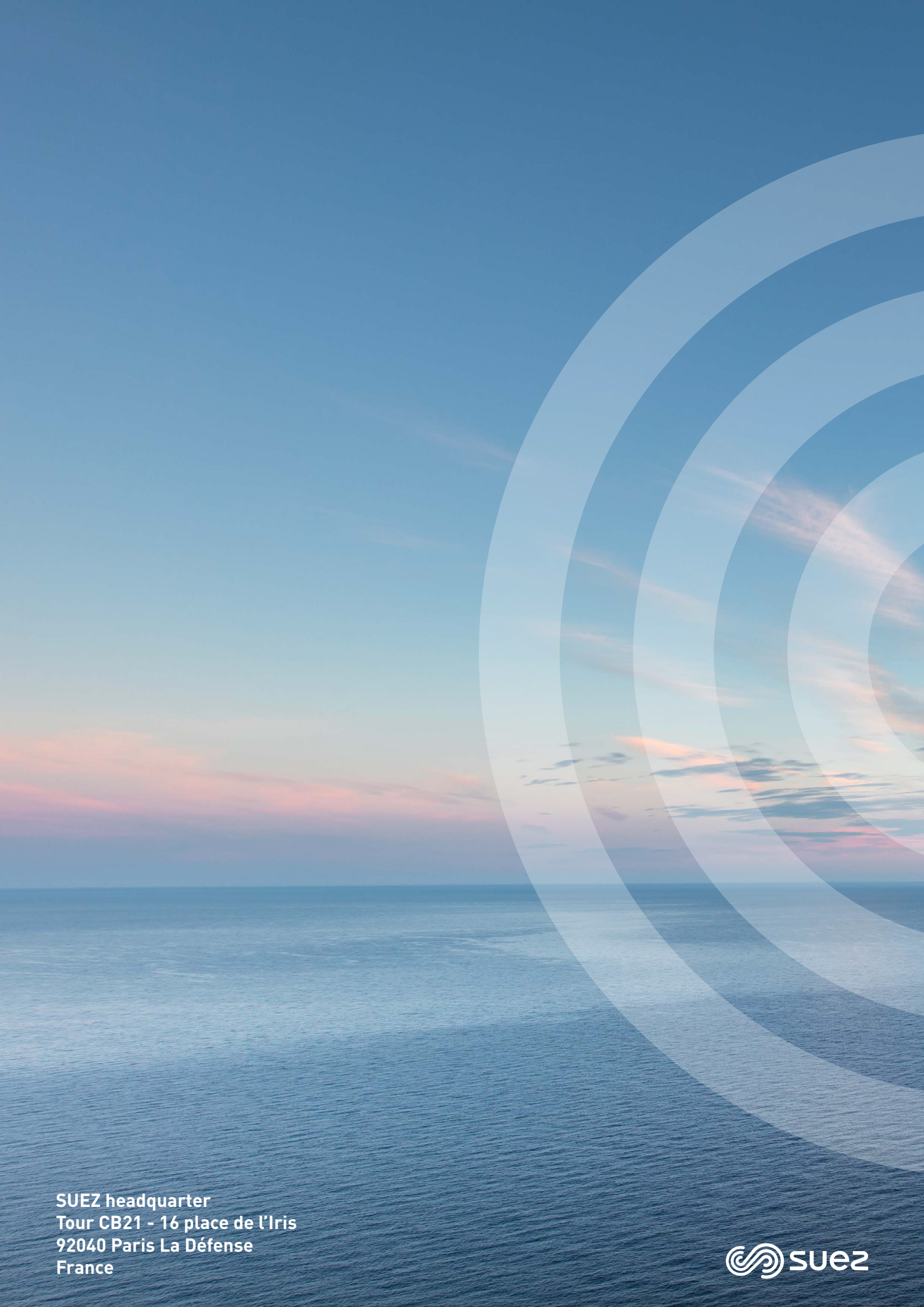
SUEZ is a global leader in essential environmental services present on 5 continents with more than 450.000 customers worldwide. Through the reliable and safe total management of water, and waste, our integrated and collaborative approach offers wide possibilities to meet resources & asset preservation challenges you face.

Combined with our unique and differentiating offering covering a broad portfolio of advanced technologies, innovative solutions, and digital services, our dedication is to improving your performance, competitiveness while ensuring the highest level of compliance with regulations in force in each country. Supported by decades of experience with large industrial clients, SUEZ brings added value to Food & Beverage industry delivering sustainable water treatment and waste treatment including packaging recycling solutions.

Our solutions cover the whole value chain from the utilities, process water to waste management in many sectors such as dairy, brewery, soft drinks, distilleries, meat & poultry, grain milling, sugar, processed and prepared food.

We can also support you with consulting services regarding resources management & climate change adaptation, construction, site management or environmental studies & permitting. And help you on packaging management, from eco-conception, recyclability certification, recycling solutions, as well as recycled material supply.

CONTACT US



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