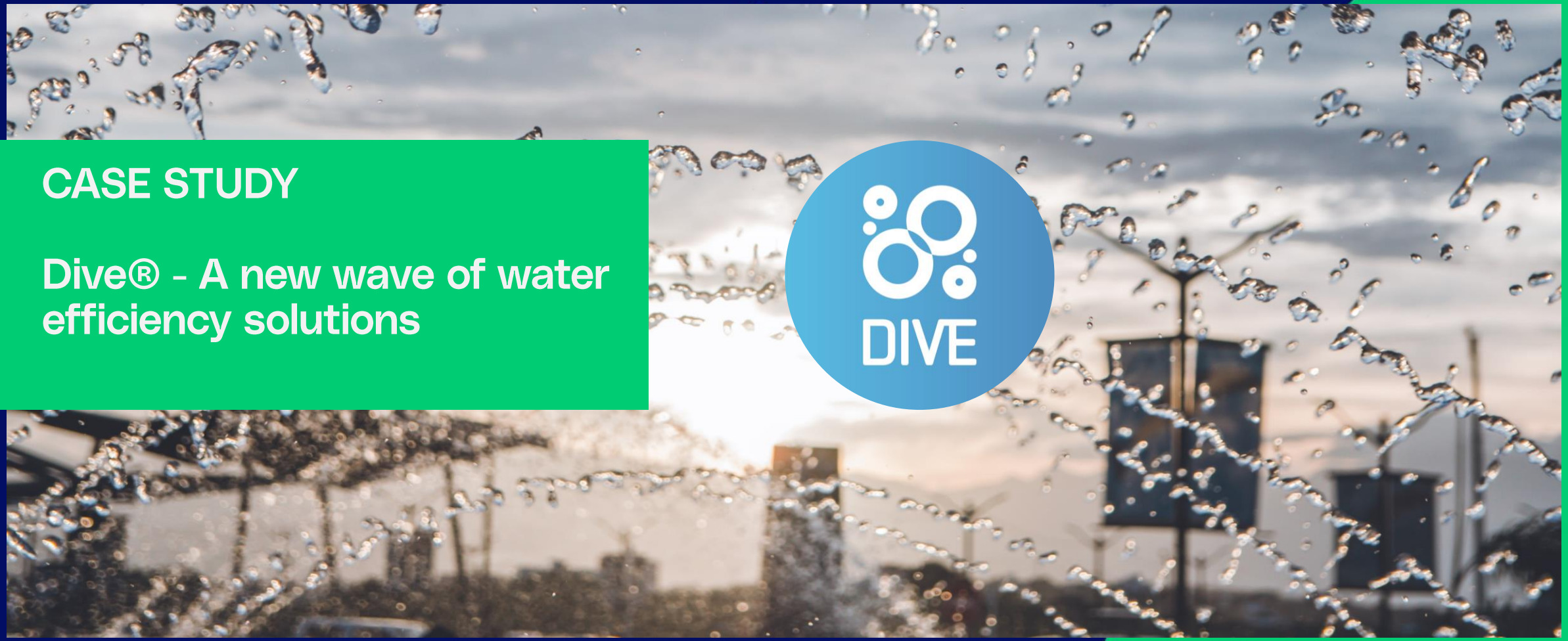
Open mind
Greater value

Sierra Sonae



CASE STUDY

Dive® - A new wave of water efficiency solutions

Published in 2020

Case Study | Executive Summary

DIVE® - A NEW WAVE OF WATER EFFICIENCY SOLUTIONS

Unable to find a solution on the market that was sophisticated enough to meet our needs, we created our own - Dive® - a modelling tool to improve water efficiency in real estate.

Challenge

Water scarcity is a global concern and Water crisis is in the Top 5 Global Risks in terms of impact identified by the World Economic Forum, and in the Top 10 Risks in terms of likelihood.

All businesses will have to deal with the effects of water constraints, and early adopters will not only benefit from the costs avoided with the water consumption reduction but will also bypass the increased prices of related technologies and services when water crisis become an even more common reality.

Water consumption in real estate assets varies significantly from one asset to another, influenced by differences in location; climate; building systems; presence of water features and external landscaped areas; tenant mix; visitor behaviour and operational procedures, and detangling these factors is a complex task. Sonae Sierra began looking for a tool that offered the level of rigour and detail required to unpick the individual contribution of all factors contributing to assets' water consumption and calculate the cost/benefit of different potential improvement measures.

Solution

Sonae Sierra developed Dive®, a tool which allows to assess a building's real water consumption against a theoretical optimal simulation, thereby identifying technical and management-level improvement measures.

This model has been built to consider the different climatic and geographical settings; water-consuming systems, fixtures and fittings; occupancy patterns and visitor behaviour that a building might have. It can identify the least efficient systems and operational routines, as well as quantify the environmental and financial benefits of the improvement measures.

By comparing the optimal water consumption (assessed by the tool), with the real one, and comparing assets within a portfolio, clients gain valuable data that can be used to inform and shape decision-making, allowing them to assess the assets towards which the efforts should be driven.

Case Study | Executive Summary

DIVE® - A NEW WAVE OF WATER EFFICIENCY SOLUTIONS

Outcome

Dive® has huge potential to improve water efficiency and reduce costs for Sonae Sierra's clients, creating financial, reputational, social and environmental value.

Highlights

- **Dive® is a comprehensive water management and improvement programme that can either be provided as a complete turn-key service, or as standalone services for our clients.**
- **Between 2014 and 2019, we implemented €115,000 worth of water efficiency measures identified by Dive®, avoiding annually around €428,000 in costs and the consumption of 105,000 m3.**

KEY RESULTS

€115,000
Total investment

€428,000
annual costs savings

105,000m^3
annual reduction in water consumption

Abstract

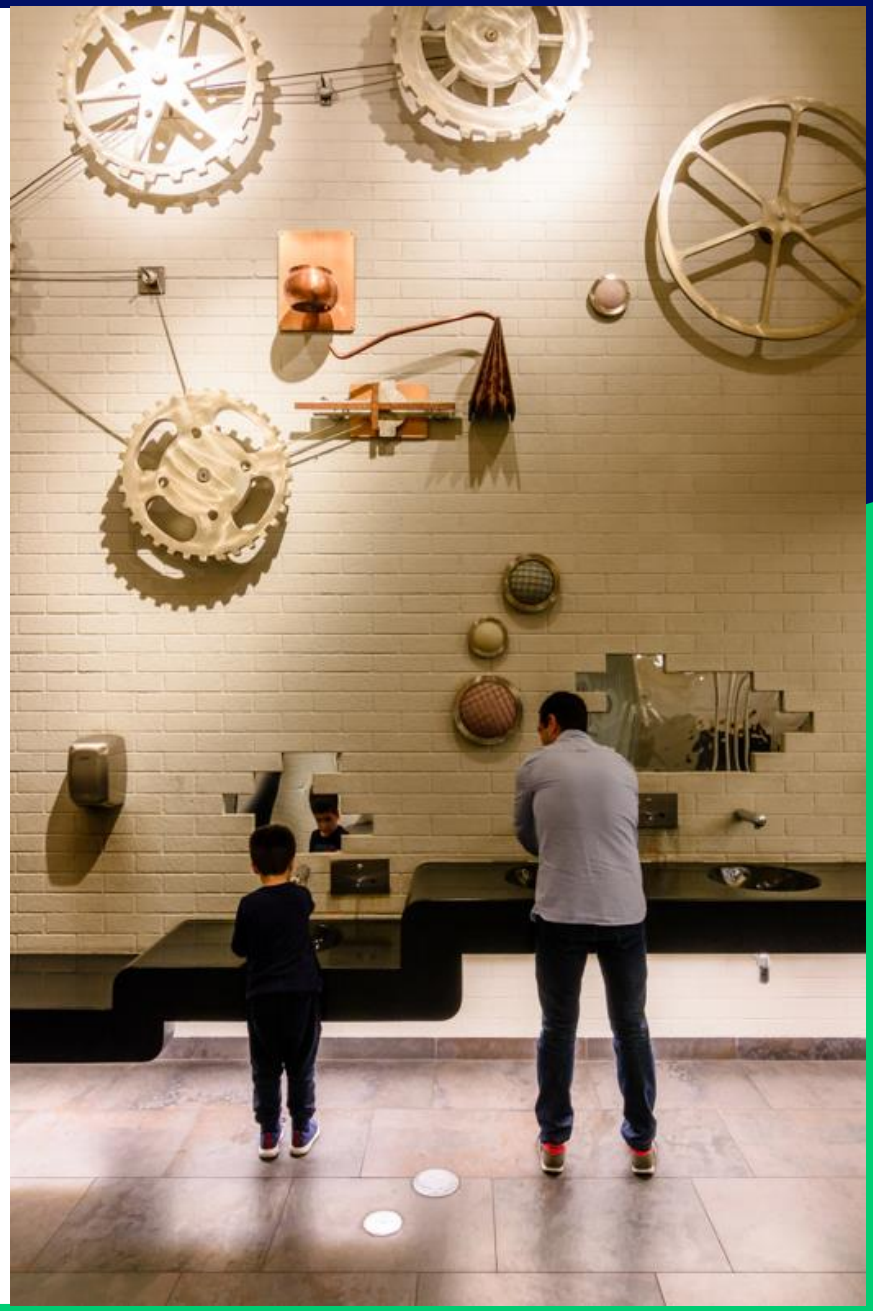
Water scarcity is a global concern, and it's imperative that businesses and households find ways to use less water, and extract and consume what we do use, more efficiently.

A pioneer in eco-efficiency, Sonae Sierra has developed Dive ®, a unique programme designed to lower water consumption and its associated costs. Using Dive®, we take a holistic approach to identifying water saving opportunities within the building setting.

Dive® exploits the power of real data to examine every aspect of an asset's operations. It identifies quick-wins, medium- and longer-term investments which can be implemented to improve water management and deliver environmental and financial benefits. It builds on the accumulated knowledge Sonae Sierra has gained from more than 25 years in implementing environmental standards in the development, investment and management of real estate assets.

Since 2014, Sonae Sierra implemented €115,000 worth of water efficiency measures identified by Dive® in 19 assets, avoiding annually around €428,000 in costs and the consumption of 105,000 m3.

Underpinning our commitment to create value for our clients, Dive® forms part of our integrated client service offer.



Introduction

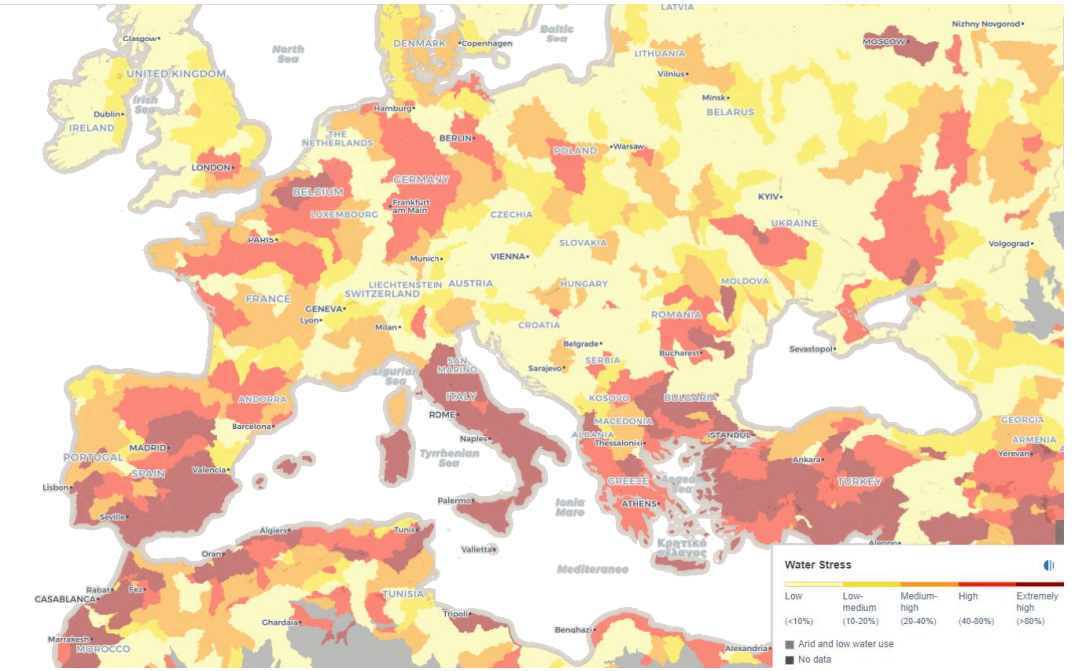
Water use has been growing at more than twice the rate of population increase. Over the past several decades, ever-growing demands for – and misuse of – water resources have increased the risks of pollution and severe water stress in many parts of the world.

As climate change alters rainfall patterns around the world and more water sources become polluted, a growing number of aquifers, rivers and lakes are drying up or no longer fit for use, affecting human populations and ecosystems alike. The significant decline in the available quality and quantity of fresh water, also results in harmful effects on economic activity. The World Bank estimates that the water crisis could slow GDP by 6 percent in some countries by 2050.

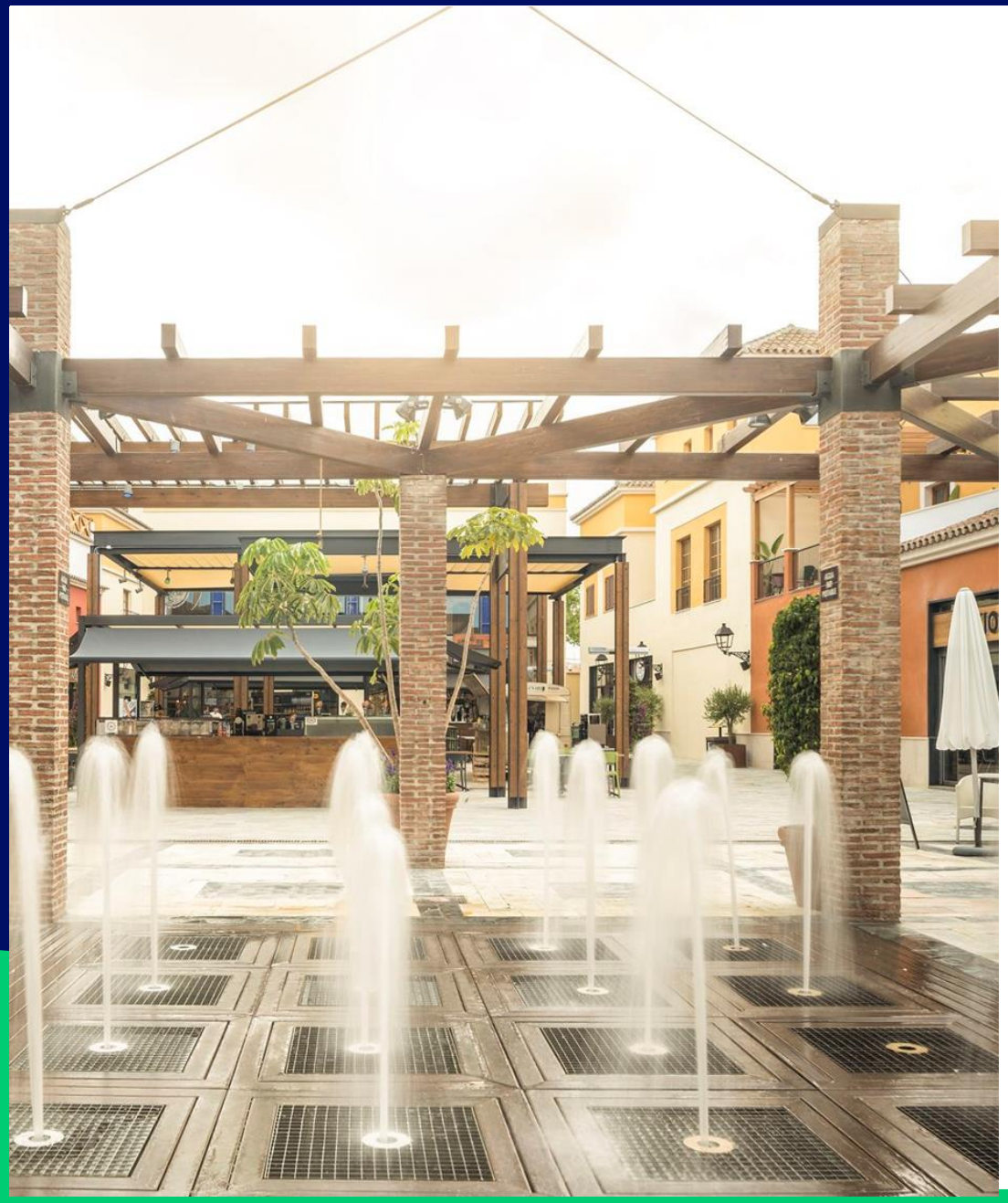
In 2018, in the midst of a severe drought, Cape Town, South Africa, came close to experiencing a so-called Day Zero, where the city would have run out of water and extreme situations like this are likely to become more frequent and impactful. In fact, **Water crisis** is in the Top 5 Global Risks in terms of *impact* identified by the World Economic Forum [1], and in the Top 10 Risks in terms of *likelihood*.

The supply of fresh water has been steadily decreasing while demand has been steadily rising, therefore water efficiency in the built environment, is crucial to tackle this challenge. Buildings are a major consumer of water, putting pressure on local resources particularly during periods of drought.

[1] Source: THE GLOBAL RISKS REPORT 2020



EXAMPLES OF WATER STRESSED REGIONS
Source: World Resources Institute



Introduction

All businesses will have to deal with the effects of water constraints, and early adopters will not only benefit throughout the time from the costs avoided with the water consumption reduction, but will also bypass the increased prices of related technologies and services when water crisis become a more common reality.

Water consumption in real estate assets varies significantly from one asset to another, influenced by differences in location; climate; building systems; presence of water features and external landscaped areas; tenant mix; visitor behaviour and operational procedures. Deep investigation as to how water is being consumed is vital to understanding how these variations occur, and identifying where the most effective changes should be made to reduce pressure on external water sources. However, in practice it can be difficult to distinguish between inefficiencies deriving from location, building features and equipment, and those relating to management practices.

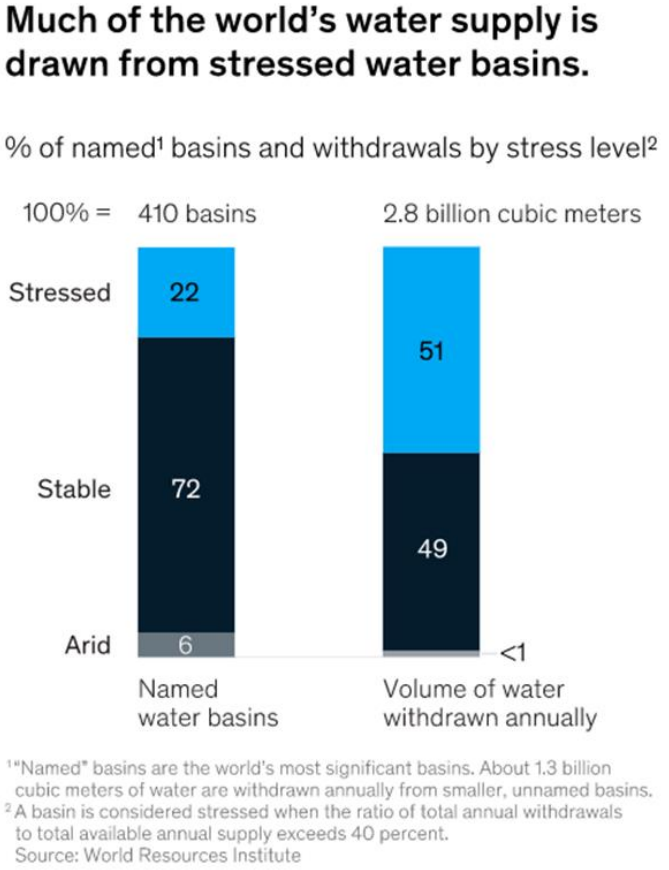
Background

With more than 30 years' experience in developing, investing and managing real estate assets across four different continents, Sonae Sierra has unrivalled expertise and an enviable track record.

Our approach to sustainability is embedded in the way we do business, earning us a strong reputation and various awards. Underpinning our approach is the goal of creating value, and enhancing the sustainability credentials of our clients' real estate assets, is of the utmost importance to this goal.

For us, water management is about ensuring assets' long-term resilience. Several of our assets are located in areas of water stress, and we offer services to clients in geographies as diverse as Europe, South America, North Africa and Asia, all of which encompass regions where water scarcity is a risk.

Two-thirds of businesses have substantial risk in direct operations or in their value chain. As water stress grows, they will experience that risk in four forms: physical, regulatory, reputational, and stakeholder. As such, we have intensified our long-term commitment to reduce water consumption, and demonstrate to our clients the business case for investing in water efficiency improvements.



[1] Source: McKinsey Water: A human and business priority article

Challenge

Businesses depend on water and for assets to become resilient, there needs to be a fundamental shift in the way water is managed.

Companies face physical and non-physical risks connected to water scarcity and managing water efficiently offers businesses opportunities to gain a competitive advantage, while securing their license to operate, reducing financial losses and altogether ensuring continuity of operations.

Businesses can play a leading role in mitigating the water challenge to limit not just their own risk but also the risk of all stakeholders relying on these systems.

Despite Sonae Sierra track record in improving the water efficiency of its assets since 2002, there have often been irregularities in buildings' water consumption rates that could not be explained by physical and locational variations. Water needs depend on a variety of factors such as local climate, usage patterns, equipment efficiency, landscape characteristics, occupancy and visitor numbers.

A significant challenge to reducing water use is identifying when high consumption is the result of inefficient operational procedures and equipment, as opposed to other factors such as design and climate.

Sonae Sierra began looking for a tool that offered the level of rigour and detail required to unpick the individual contribution of all factors contributing to assets' water consumption and calculate the cost/benefit of different potential improvement measures. But we were unable to find a solution on the market that was sophisticated enough to meet our needs.

RISKS

OPPORTUNITIES

Adapted from WBCSD **CEO GUIDE TO WATER - BUILDING RESILIENT BUSINESS** publication

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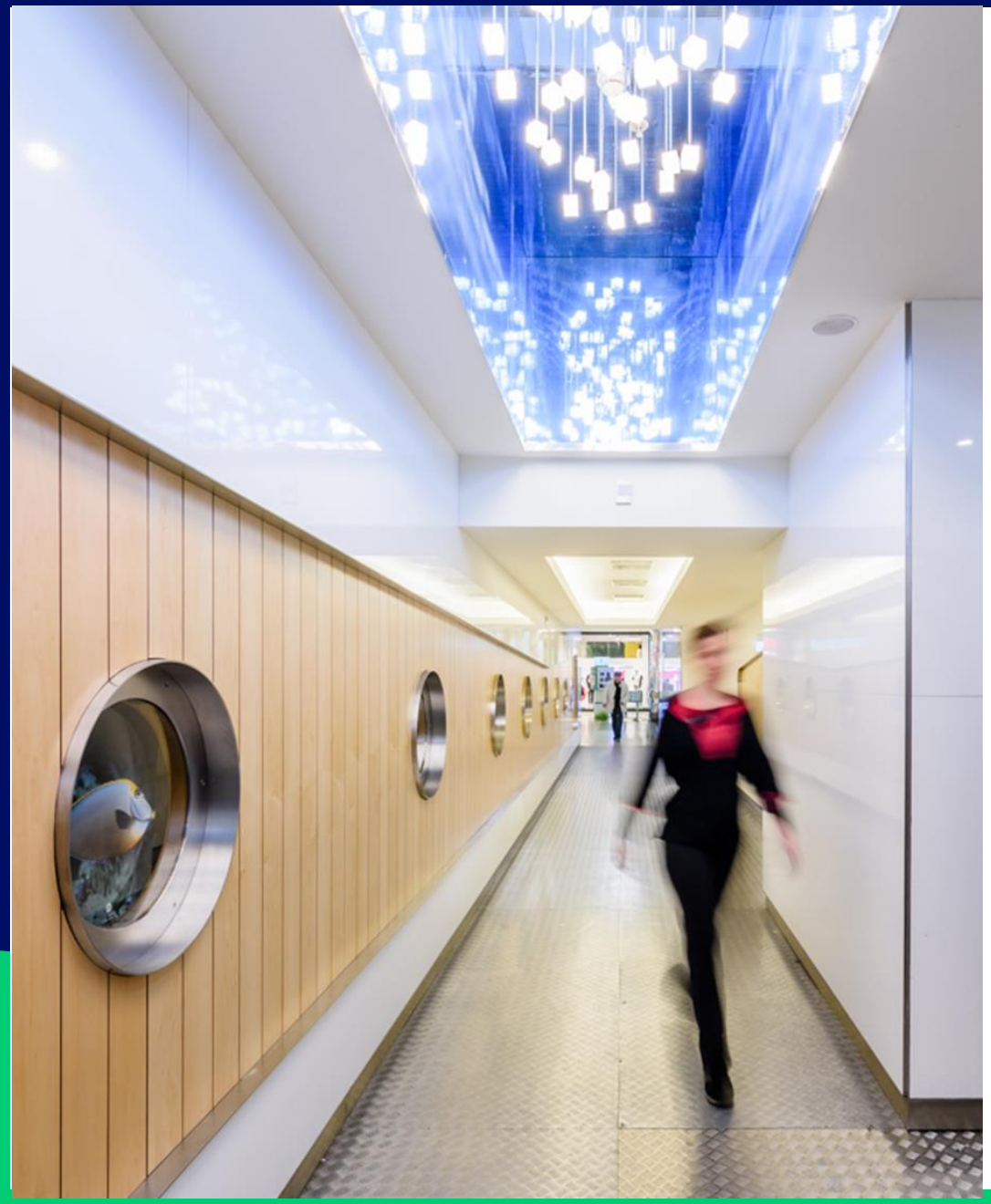


Solution

The solution was found in Sonae Sierra's in-house expertise. We decided to take a 'deep dive' and develop **our own tool that could identify targeted, cost-effective measures to lower real estate's water consumption whilst maintaining, or even improving, the level of service to tenants and visitors.**

We developed a modelling tool which allows us to assess a building's real water consumption against a theoretical optimal simulation, thereby identifying technical and management-level measures that can be taken to increase efficiency. The theoretical model has been built to take into account the different climatic and geographical settings; water-consuming systems (e.g cooling towers, irrigation etc), fixtures and fittings; occupancy patterns and visitor behaviour that a building might have. It can identify the least efficient systems for both individual assets and operational routines, and quantify the environmental and financial benefits of potential improvement measures, including quick wins; medium - and longer-term investments

Solution

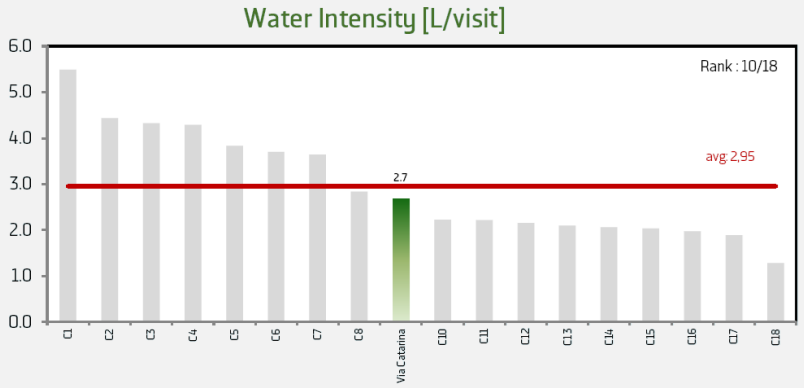
The success of the approach when piloted on Sonae Sierra's own assets led us to **reposition Dive® as a comprehensive water management and improvement programme that can either be provided as a complete turn-key service, or as standalone services for our clients, encompassing**:

1.PORTFOLIO ANALYSIS AND BENCHMARKING

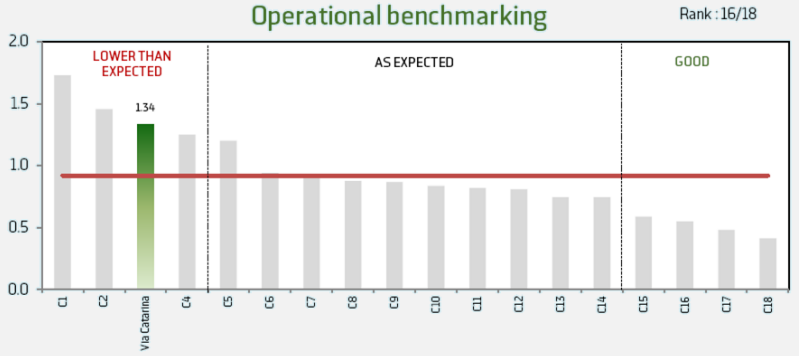
Compares and evaluates optimal water use with the real water use and allows comparison of assets within a portfolio.

Water use varies significantly between real estate assets. By comparing expected water usage with the real use and comparing assets within a portfolio, clients gain valuable data that can be used to inform and shape decision-making.

As an example, one of our assets, ViaCatarina Shopping (in Portugal), had a water use lower than other assets within the portfolio. A traditional data analysis would define it as a good performer not needing investment/management efforts to improve its performance. However, with the implementation of this phase it was possible to confirm that the asset was performing worse than the theoretical optimum and had much room for improvement.



VIACATARINA SHOPPING "TRADITIONAL" BENCHMARKING



VIACATARINA SHOPPING SPECIALIZED BENCHMARKING

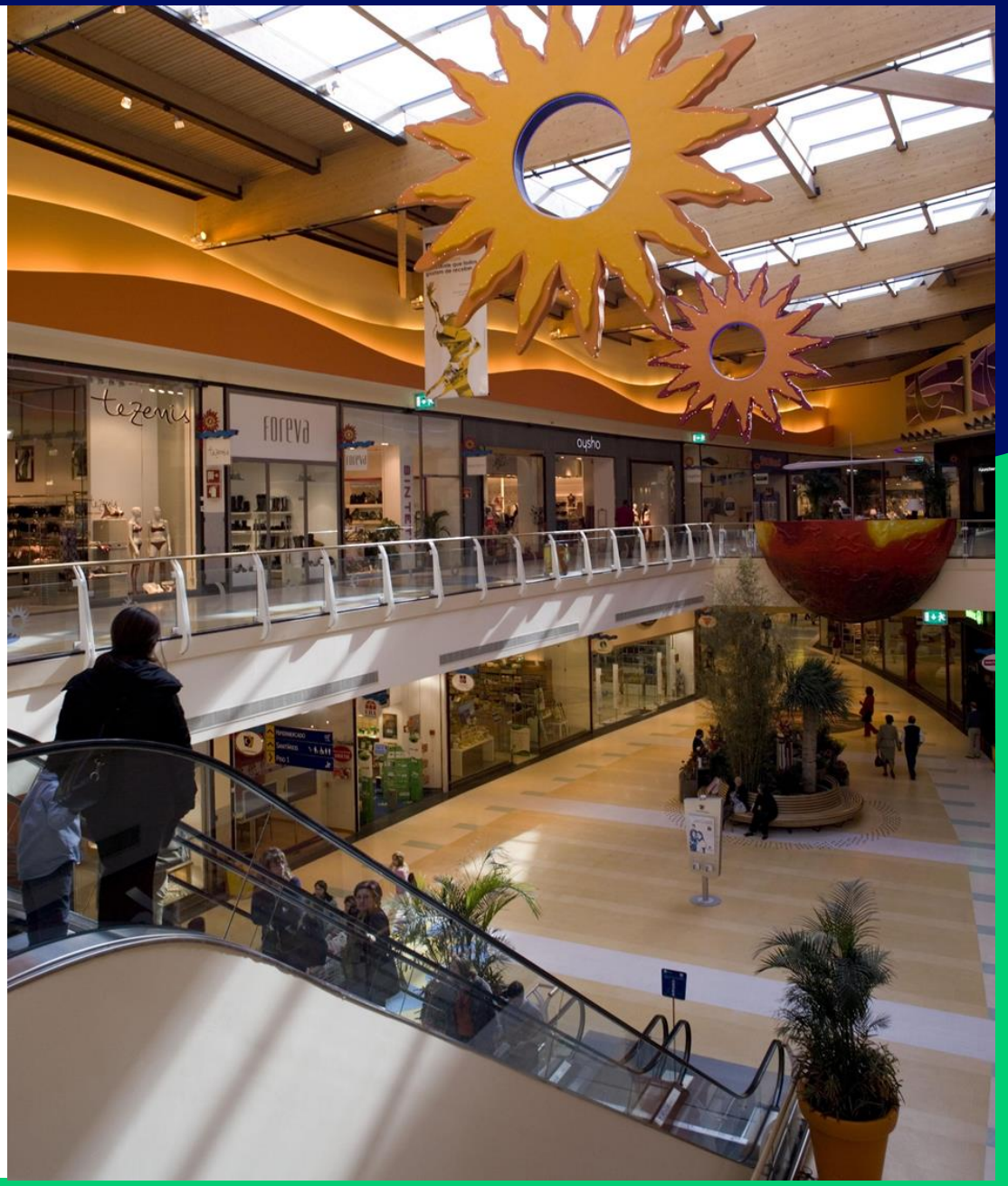
Solution

In LoureShopping in Portugal, the reverse situation occurred, as it was apparently the worst performer of the portfolio, with the highest water consumption per visit, of the sampled portfolio. However with the implementation of this phase it was possible to confirm that considering the asset's intrinsic characteristics and context, its real water consumption was close to the optimal, and therefore it was performing good, both considering the systems in place and management practices.

Data from the specialized benchmarking can then be crossed with other factors such as Water Scarcity indexes, water cost etc, melting all factors and providing one indicator that allows assets to be compared with others and provides investors with a valuable picture of their portfolio performance, allowing them to assess the assets towards which the efforts should be driven.

Dive® sophisticated benchmark and portfolio analysis is therefore a great tool to manage portfolio, offering an in-depth knowledge that allows to target investment where it will have the greatest impact.

Up to 2019, we have performed 179 Dive® Benchmarks, identifying 133 recommendations for improvement, which account potential annual savings of around €435,000.



Solution

2. SPECIALISED AUDIT & RECOMMENDATIONS

Specialised water audits offer clients a detailed review of water use, from equipment and control systems, to processes and management practices. Recommendations are then made for ways to improve water usage, with each assessment further enhanced thanks to Dive's state-of-the-art building modelling tool. Up to 2019, Dive® specialized audits identified 68 water optimisation measures that are already implemented, undergoing or waiting for assessment, across 19 assets.

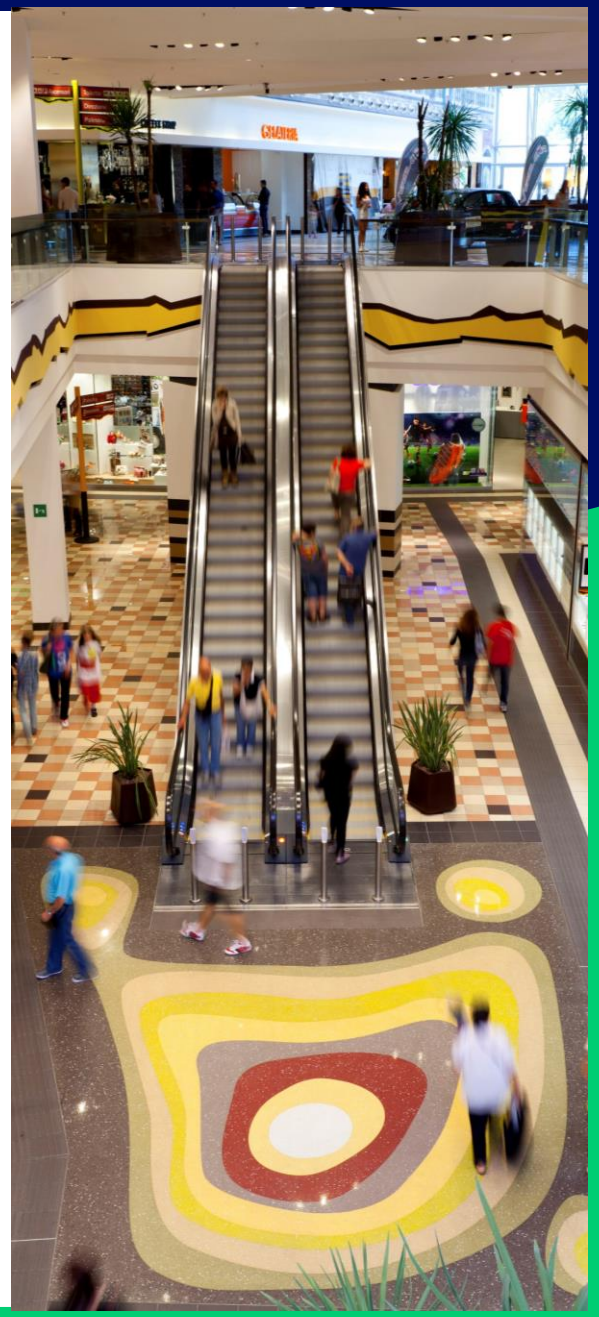
One of these examples is Passeio das Águas Shopping in Brazil, where several measures were identified **enabling the asset to avoid annually around 28,700 m3 and €76,000 in costs with a total investment of around €3,660**. These comprehended several measures as, for example a rainwater reuse systems implementation; installation of aerators in several faucets; improvements in showers from changing rooms; and automatic control in cooling towers purges.

In Le Terrazze, in Italy, the measures identified in the specialized audits consisted mainly in adjustments in flow rates, improvements related to irrigation, and the reuse of rainwater for cooling towers, irrigations and toilets, which **enabled the asset to avoid annually 16,500 m3 and €67,000 in costs, with a total investment of €20,600.**

In both these assets the overall payback period was inferior to 4 months.

In LeiriaShopping in Portugal, Dive® identified water efficiency improvements with a pay-back period of just 10 days. **With an extremely low investment of around 85€, savings of around €1,600 were achieved, corresponding to around 3,300 m3 of water, more than 10% of the asset's total water consumption.**

Dive® applications at a series of other assets have yielded similarly pleasing results.



Solution

2. TECHNICAL SUPPORT AND DELIVERY

The first-class delivery and installation of water efficiency upgrades are achieved through the compilation of detailed specifications, designed to facilitate procurement of the best solutions identified on benchmarking and, or on the specialized audit.

Our technical expertise enables the smooth implementation of measures, while ensuring the achievement of the savings and benefits detailed in the specialised audit. **The ability to track water use and the performance of water efficiency measures on an ongoing basis forms a vital part of Dive®. This is done by ensuring that meters are optimally located and configured, connected to a Water Monitoring Application collecting real-time quality consumption data from across the asset.** Dive® also enables a quick detection of inefficiencies, minimising the effort from staff and false alarms and optimising the operations of asset.

As one example, in Passeio das Águas Shopping in Brazil, in order to have a precise track of the water use and also to support a correct water management and quick detection and correction of abnormal patterns, several adjustments on sub-metering level were implemented: analysis and correction of metres installed; amendment of communication problems between the metres and the BMS; and installation of new metres.

Dive® has been tested and finely refined through its application at different assets delivering outstanding results.

Conclusion

Dive® programme supports companies operating worldwide going deeper in their water management journey minimizing risk and building long-term resilience.

The development of Dive® was an innovative, proactive response to the lack of appropriate solutions in the market. Having found that no single tool available offered the sophisticated solution Sonae Sierra needed, our specialists developed their own.

The experience gained across different assets has demonstrated that by using the Dive® modelling tool and engaging management teams and contractors, it is possible to identify and deliver significant water savings with little or no investment cost.

Dive® implemented measures to date enable annual savings of nearly 105,000 m3 of water and €428,000 in costs. The average payback time of the measures implemented is around 3 months.

As such, Dive® has huge potential to improve water efficiency and reduce costs for Sonae Sierra's clients, creating financial, reputational, social and environmental value for their businesses, customers and the communities where they are present.


www.sonaesierra.com