About this Report

Europe Water for Data Centers:

Market Trends, Opportunities, and Forecasts, 2026–2036

Report at-a-glance

- Data Center Landscape
- Market Drivers & Inhibitors
- Market Sizing & Forecasts
- Technology & Geographic Trends
- Competitive Landscape

ADVANCING WATER STRATEGIES

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Summary

BACKGROUND

AI is rewriting Europe's data center map, and water is the next bottleneck investors are not pricing in. Hyperscale AI campuses are pouring more than €60 billion into Europe's power and digital grid. This wave is reshaping where data centers can be built, how they are cooled, and what it takes to operate them.

The bigger story sits upstream. Indirect water use—embedded in the electricity that powers European data centers—is roughly 502 billion liters in 2026 and is tied to the generation mix.

Growth is now hitting hard limits. Grid congestion in FLAP-D hubs. Permitting timelines of 24 months to 48 months. iPublic opposition over water use. EU rules that now require energy and water KPI reportng for every facility above 500 kW. Water has shifted from a utility line item to a license to operate. As AI and ML rack densities climb toward 100 kW to 200 kW, air cooling has run out of room. Liquid and hybrid cooling cut direct water volumes, but raise the bar for quality, uptime, and resilience that today's infrastructure cannot deliver.

Where the €6.8 billion water market opens. Cumulative CAPEX and OPEX across Europe through 2036, with the fastest growth in Spain, Italy, Portugal, Poland, and the Nordics as FLAP-D saturates.

Across three scenarios, cumulative TOTEX runs from €4.7 billion to €7.1 billion, with the baseline at €6.8 billion. AI rack density, EU compliance for PUE and WUE, and grid connection timing move the market by roughly €2.0 billion at the tails.

report SCOPE

A comprehensive look at Europe's data center water market: market drivers, regulatory pressure, investment outlook, and how leading players are positioning across the water solution space. This report maps where, when, and how the market opportunities open-up, and what the AI surge is priming the market for next.

report HIGHLIGHTS

- Coverage includes CAPEX and OPEX
- 30 EU countries plus the U.K.
- Four data center types
  - Enterprise, colocation, hyperscale, mega campus
- Six cooling technologies
  - Hybrid cooling, air cooling, indirect evaporative cooling, direct evaporative cooling, water-cooled chillers, direct liquid cooling
- Upfront investment for four treatment technologies
  - Ultraviolet (UV), filtration, softening, reverse osmosis
- Forecast spans eleven years, from 2026 to 2036

Sample Bluefield Insights

The Green Deal meets digitalization, and Europe must choose where to lead. This crossroads unlocks a €6.8 billion water market.

Europe is being pulled in two directions: the Green Deal and the digitalization race. The real question is no longer whether white space exists, but rather how to capture it while hitting both sustainability targets and AI buildout.

- **Direct water use is small, but its impact is outsized.** It drives permitting outcomes, community acceptance, and project timelines. Indirect water use, embedded in electricity generation, ties data center growth to the broader energy and water system.
- **CAPEX captures the lion's share of TOTEX.** Of the €6.8 billion cumulative water market, 62% is CAPEX, concentrated in onsite water equipment, municipal infrastructure, and pretreatment. OPEX covers water bills, chemicals, labor, monitoring, and maintenance. The strongest value sits where project CAPEX converts into long term service revenue.
- **Reverse osmosis leads treatment CAPEX at 42%,** followed by softening, filtration, and UV. Treatment is moving beyond basic conditioning toward integrated trains that unlock recycled water, non potable sourcing, cooling loop protection, discharge compliance, and lower permitting risk.
- **Cooling spend is pivoting to direct liquid cooling.** Growing approximately at a 17% compounded rate and expected to reach approximately 20% of the cooling market by 2026, becoming the main AI density enabler. Cooling towers, chillers, adiabatic systems, dry cooling, and heat reuse remain relevant depending on climate.
- **Growth is rotating from mature hubs to secondary markets.** FLAP-D remains the largest spend pool at €3.82 billion across 2026 to 2036. Spain, Italy, Poland, Portugal, and the Nordics are the next wave. By 2036, FLAP-D holds 56% of the market while emerging hubs climb to around 38%.
- **The commercial model is shifting to long duration contracts.** Operators want cooling partners that can de-risk water sourcing, permitting, utility interconnection, uptime, and lifecycle cost. The cooling shift is also priming the market for consolidation and vertical integration.

Research Methodology

SCOPE

This report sizes the European data center market across 31 countries from 2026 to 2036, covering both capital expenditure (CAPEX) and operating expenditure (OPEX). Water use, direct and indirect, is the primary demand metric, reflecting growing regulatory and operational pressure on the sector. Coverage spans core FLAP-D hubs and emerging markets, capturing the geographic shift in investment driven by AI workloads and grid constraints.

METHODOLOGY

- **Market Sizing**: The foundation is a comprehensive inventory of operational, under-construction, and announced facilities, classified as hyperscale, colocation, or enterprise. Growth from 2026 to 2036 is driven by announced and permitted projects, phased by country and hub to reflect permitting timelines, grid availability, and construction lead times. This approach captures geographic divergence in growth patterns, including the shift from greenfield expansion in emerging markets to densification and retrofit activity in mature FLAP-D hubs.
- **Cooling Technology Attribution**: Cooling technology is assigned by facility type, climate zone, and development stage. Existing facilities retain legacy systems unless retrofit activity is explicitly modeled; greenfield developments reflect higher rack densities and AI workload requirements. Six technologies are modeled, hybrid cooling, air cooling, indirect evaporative cooling, direct evaporative cooling, water-cooled chillers, direct liquid cooling, with adoption curves across conservative, base, and accelerated scenarios to account for uncertainty around regulation, public pressure, and grid access.
- **Water & Energy Demand**: Energy demand is calculated using median IT load profiles by facility type and PUE. Indirect water use is estimated by combining electricity demand with country-specific power generation mixes and water intensity factors. Direct on-site water use is calculated using cooling-technology-specific WUE values, adjusted for climate, regulatory constraints, and growing adoption of reclaimed water sources in constrained markets.
- **Investment Sizing**: Spend is segmented by CAPEX and OPEX, data center type, and cooling technology, benchmarked against total construction spend, projected market size, and Big Five investment pipelines. A 2.5% annual upgrade rate is applied to the installed asset base, with a 5% increase in liquid cooling share reflecting AI-driven densification trends.

DATA SOURCES

Primary:

- Industry interviews
- Company disclosures and sustainability reports

Secondary:

- Eurostat
- International Energy Agency (IEA)
- European Commission
- European Environment Agency
- Data Center World Map
- Climate Neutral Data Center Pact
- World Bank

A Bottom-Up Model Across 31 Countries Underpins €6.8 Billion Forecast

The Europe data center water market is modelled using a bottom-up approach, based on country-level data center inventory, cooling technology mix, and electricity profiles, with outputs calibrated against industry benchmarks.

Number of Data Centers Across EU

- Enterprise
- Hyperscale
- Colocation
- Mega Campuses

+

Type of Investment

- New build
- Upgraded

Treatment Source

- Connected to municipalities
- Onsite treatment and discharge

Main Cooling Technology

- Air cooling
- Liquid cooling

+

Expenditures and Analyzed Verticals

CAPEX

- Municipal Infrastructure
- Onsite Water Equipment
- Pretreatment and Treatment System

OPEX

- Water Bill
- Energy
- Chemical
- Monitoring

=

Total Market Size & CAGR

Source: Bluefield Research

Key Questions Addressed

- How is the EU regulatory timeline reshaping project economics—and what does compliance with water KPI reporting mean for operators' water sourcing and treatment investment?
- As hyperscale and AI campuses scale across Europe, where is water emerging as an active permitting barrier, and which markets face the highest risk of project delay or cancellation?
- Which markets are genuinely open for new capacity? How are Spain, Italy, Portugal, Poland, and the Nordics absorbing the overspill from constrained FLAP-D hubs?
- How much water is embedded in the electricity powering Europe’s data centers, and how does country-level energy mix shape the true water footprint of AI infrastructure investment?
- Which cooling technologies are winning the AI density race, and how fast are liquid, immersion, and hybrid systems displacing air-cooled ones in real procurement decisions?
- What is the market split between CAPEX and OPEX, across cooling systems, treatment technologies, operator types, and geographies, and where is value capture concentrated?

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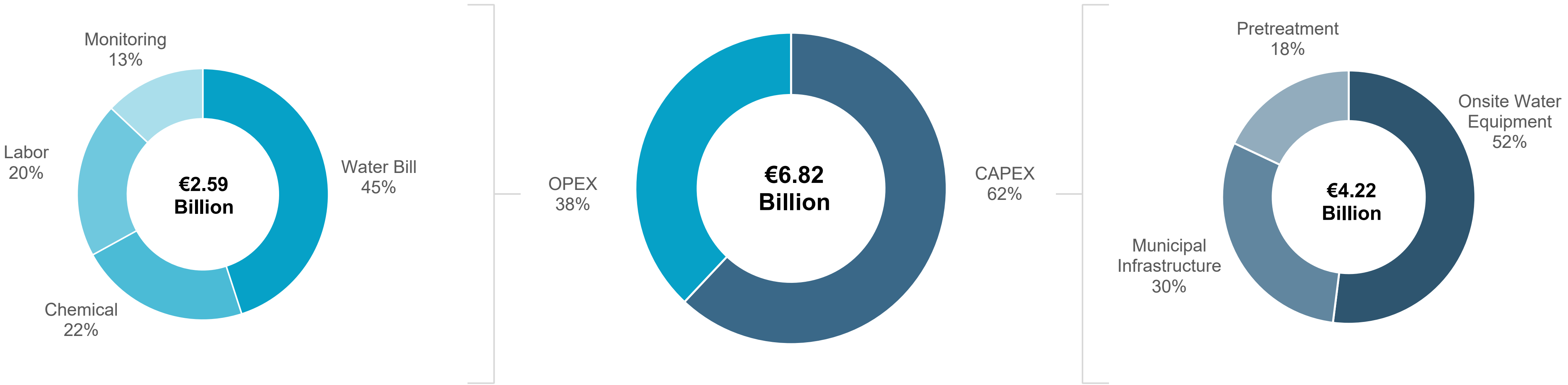
The CAPEX-OPEX Split Defines Who Competes Where and Who Gets Squeezed

With CAPEX accounting for approximately 62% of total spend, or €4.22 billion, the market presents a significant opportunity for service and OPEX-oriented providers to generate recurring revenues and capture long-term value.

- CAPEX-led market structure, with 62% of total water-related spend tied to onsite water equipment, municipal infrastructure, and pretreatment. This reflects the shift from conventional cooling upgrades to AI-ready infrastructure buildouts, where water resilience must be engineered into the site before capacity can be delivered.
- The biggest near-term opportunity is onsite water equipment and pretreatment, which accounts for more than half of CAPEX. That's where cooling-system vendors, treatment-technology providers, and integrators can capture project value — through filtration, reverse osmosis, closed-loop systems, reuse infrastructure, and liquid-cooling support equipment.
- OPEX is smaller at 38%, but it is the more defensible long-term revenue pool. Water bills, chemicals, labor, and monitoring scale with utilization, uptime requirements, and cooling intensity. As AI workloads increase operating hours and thermal stress, recurring contracts around water quality, membranes, chemicals, monitoring, and compliance become stickier and more valuable.
- The risk is that players exposed only to one side of the spend pool may be squeezed: pure CAPEX vendors face project-cycle volatility, while pure OPEX players may miss the strategic control point created during design and build.

CAPEX and OPEX Cumulative Value, 2026–2036



Source: Bluefield Research

AI Demand Too Strong to Reverse, But Europe's Constraints Cap Market Acceleration

The accelerated, base-case and conservative scenarios are shaped by the key market drivers and inhibitors.

- The accelerated growth case is likely to happen if hyperscalers continue locking long-term leases, governments fast-track AI infrastructure, grid access improves, and energy prices stabilize enough to bring delayed projects back into construction. Public pressure is reduced or overlooked on the count of the indirect and the induced economical impact of the data centers.
- The conservative scenario becomes more likely if grid connection delays, elevated power prices, permitting challenges, and higher financing costs constrain data center development. Recent market signals suggest these risks are becoming more pronounced. For example, Amazon has identified lengthy grid-connection timelines across Europe as a challenge to data center expansion. Under this scenario, investment does not disappear; rather, spending shifts away from new-build capital projects toward retrofit activity, tower optimization, and water-efficiency upgrades.
- The baseline scenario remains the most likely, as AI-driven demand for capacity remains strong despite Europe’s infrastructure constraints. Investment is expected to concentrate in projects with secured power, water permits, and committed hyperscale or customer demand.

D a t a C e n t e r M a r k e t S c e n a r i o C a s e s D r i v e r s a n d I n h i b i t o r s

	Accelerated	Base Case	Conservative
Permitting	↑	↑	↓
Grid Access	↑	↔	↓
Energy Prices	↓	↑	↑
Funding	↑	↔	↓
Water Availability	↑	↔	↓
Public Pressure	↓	↔	↑
Project Delays	↓	↔	↑
Increasing Demand	↑	↑	↑

↑ High

↔ Medium

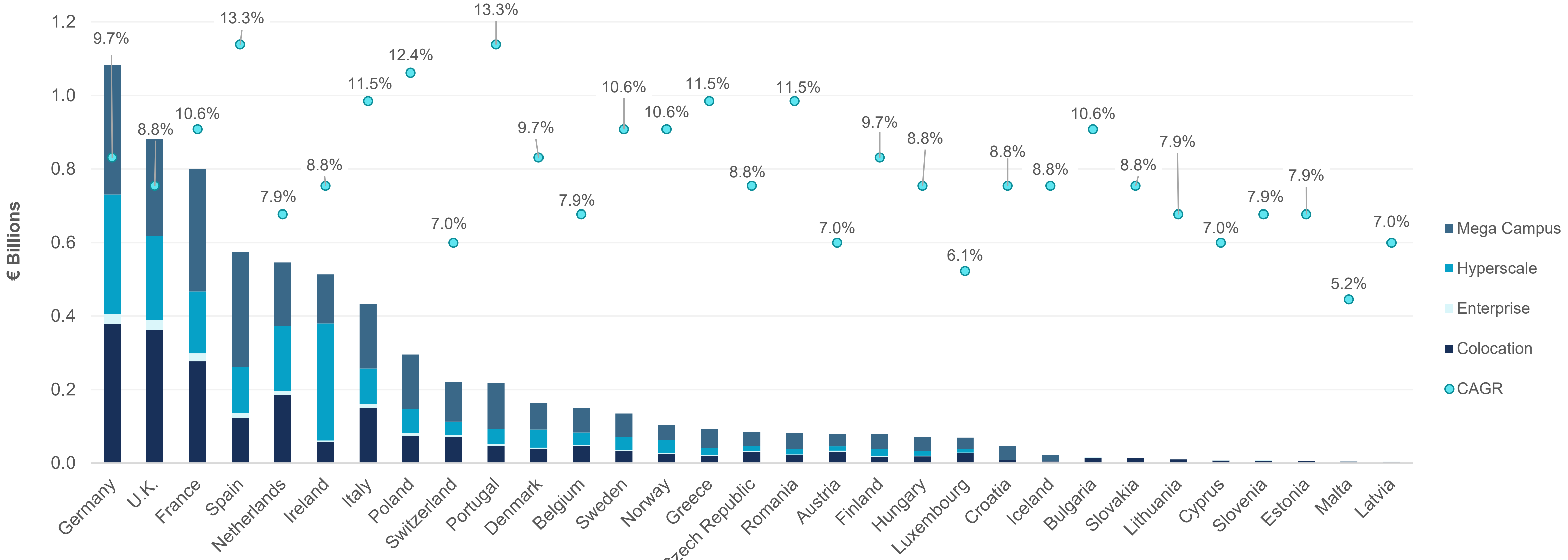
↓ Low

Source: Bluefield Research

FLAP-D Countries Anchor Absolute Spend, While Emerging Markets Offer Fastest Growth

Germany, the U.K., and France account for 40.5% of cumulative TOTEX between 2026 and 2036. However, the fastest growth is expected in emerging Tier-2 markets—including Spain, Italy and Poland—where annual growth rates range from 11.5% to 13.3% as greenfield development shifts away from FLAP-D markets constrained by permitting and grid limitations.

Data Center TOTEX and Corresponding CAGR by Country, 2026–2036



Source: Bluefield Research

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Data Dashboard

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ADVANCING WATER STRATEGIES

Global companies across the value chain are developing strategies to capitalize on greenfield opportunities in water − new build, new business models, and private investment. Bluefield Research supports a growing roster of companies across key technology segments and industry verticals addressing risks and opportunities in the new water landscape.

Companies are turning to Bluefield for in-depth, actionable intelligence into the water sector and the sector's impacts on key industries. The insights draw on primary research from the water, energy, power, mining, agriculture, financial sectors and their respective supply chains.

Bluefield works with key decision-makers at utilities, project development companies, independent water and power providers, EPC companies, technology suppliers, manufacturers, and investment firms, giving them tools to define and execute strategies.

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