SUEZ innovation in Asia **that matters**

Press Pack - 2026

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01

About SUEZ

Faced with growing environmental challenges, SUEZ has been delivering essential services to protect and improve quality of life for more than 160 years. We provide our customers with innovative and resilient solutions for water and waste services. With 40,000 employees across 40 countries, we collaborate with our customers to create value throughout the entire lifecycle of their assets and services, while also driving their low-carbon transition.

Innovation is at the core of everything we do and remains part of our DNA. This drive for innovation permeates all levels of our business and all areas served by our operations.

We firmly believe in pragmatic innovation. Our innovation focuses on our customers, their environmental challenges, and their everyday needs. We accelerate major transitions towards more sustainable and responsible practices.

- **Protecting water resources for future generations**
- **Waste recovery through circular solutions**
- **The search for new energy sources for a low-carbon future**
- **Creating pragmatic solutions that truly meet people's needs**

Through collaboration with visionary partners around the world, we turn concepts into practice, validating and optimising our innovations in real-world conditions, and ultimately turning them into reliable, proven solutions. This is the value we deliver to our customers.

02 Innovation Drivers

SUEZ's innovation is driven by a strong mission to secure the essential resources that people depend on, focusing on solving the real challenges our customers face:

- **Water resource security**
- **Network optimisation and leakage reduction**
- **Ongoing infrastructure improvements and efficiency gains**
- **New waste recycling and recovery solutions**
- **Faster transition to a circular economy**

Through impactful innovation, SUEZ provides pragmatic and feasible solutions that meet customers' current policy and environmental objectives, while anticipating their future needs.

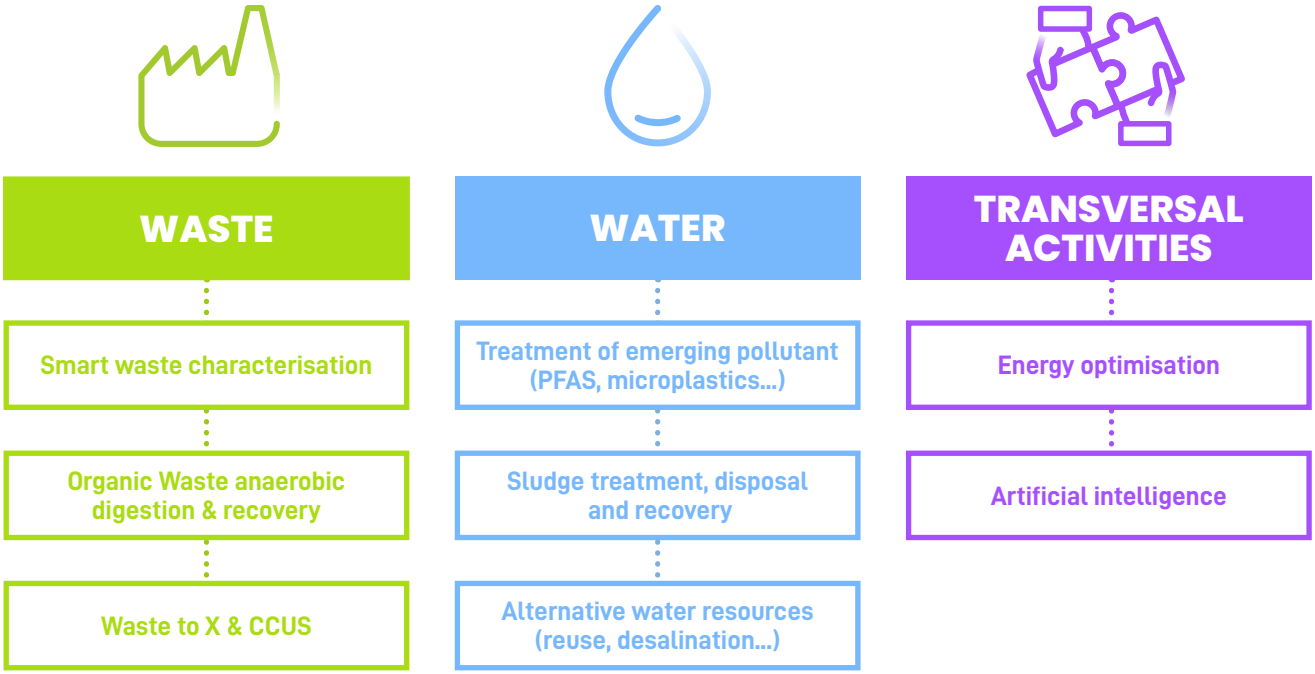
We believe that innovation drives human progress. We innovate to address the most fundamental challenges relating to water, materials, energy, and climate.

03 Innovation Overview

To address the pressing challenges in sustainable water and waste management, SUEZ is implementing an innovation strategy that is science-based and people-centred, with a focus on achieving tangible results.

SUEZ has identified its innovation priorities for 2025-2026 across three major areas: water, waste, and cross sectors. It has also listed generative AI, carbon finance, and PFAS (per- and polyfluoroalkyl substances) as strategic topics with a potential impact on commercial activities.

A strong scientific and talent base underpins our innovation. Over 1,300 researchers, engineers, business experts, operational staff, and specialists in digital technology, data management, and AI collaborate to design, test, and deploy new solutions.



This collaboration across research, engineering, and operations teams enables innovations to be tested and applied in real-world settings, while ensuring that solutions can be tailored to customer's specific needs and adapted to technological, regulatory, and local constraints.

SUEZ also has long-standing partnerships with global research institutions (including the National Research Institute for Agriculture, Food and Environment and the National Centre for Scientific Research in France) to continuously enhance our innovation capacity and transform research outcomes into customer solutions.

Worldwide

1,800+

patents

200+

R&D and innovation projects underway

1,300+

researchers

working together across a network of research centres and centres of excellence spanning chemistry, microbiology, hydraulics, process engineering, data science, and modelling

120

researchers of professional expertise at CIRSEE, our international research and development centre for the environment

40

years of professional expertise at CIRSEE

65%

of the contracts awarded to SUEZ contained innovative solutions

37

ranked 37th among the Top 50 patent applicants at the French National Institute of Industrial Property (INPI)

Asia

7
R&D centres for water and waste recycling and recovery

RMB 80
million/year of R&D spending

70+
core R&D personnel

150+
testing personnel

300+
licensed patents

22
Integrated water and waste services for 22 industrial parks in China, with reference cases in multiple frontier fields

20+
Partnering with 20+ research institutions to foster a strong academic innovation ecosystem

04 Innovation Beyond Technology

Technology is essential, but innovation goes far beyond it. SUEZ has a long track record of engineering and operational excellence. Through continuous investment in digital tools, we have built a complete value chain from R&D to industrialisation and continue innovating in contract models and social collaboration.

For SUEZ, innovation also includes the following:

› New contract models

Performance-based waste management contracts with pioneering local authorities (e.g., Grand Montauban, Limoges Métropole, and Nîmes Métropole).

› Circular economy

Creating new loops by working hand-in-hand with social entrepreneurs — bringing together environmental transition and social inclusion.

› Citizen engagement

Empowering individuals to reduce waste and promote sustainable water consumption (e.g., raising public awareness of water conservation by promoting the use of reclaimed water in Macao).

› Ecosystem

Fostering synergies with startups, academia, NGOs, and industries to be more holistic and efficient.

› People-centred care

Protecting vulnerable groups (e.g., monitoring water usage to detect irregularities and alert caregivers of elderly individuals living alone in Tanggu, Tianjin).

These innovations, from scientific exploration to industrial application, from large-scale deployment to flexible customisation, demonstrate our ability to support businesses and regions in shaping a better future.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05

SUEZ's Innovation in Asia

Innovation at SUEZ is multidimensional. While it draws on the expertise of our teams, it can only truly take root through regional implementation with our customers. This philosophy is particularly evident in Asia, especially in China.

Home to approximately 60% of the world's population, Asia is a major engine of global economic growth. As countries in the region set ambitious environmental targets, SUEZ is leveraging its innovative capabilities to help Asian cities and industries accelerate their transition to smarter, more resilient management models.

China: A strategic hub for innovation in action

China is a strategically important market in Asia. Its Dual Carbon goals (to peak carbon emissions by 2030 and reach carbon neutrality by 2060) are among the most ambitious national climate commitments to date.

The country's progress in areas such as industrial water management, waste recycling and recovery, and energy efficiency improvement has generated enormous demand for innovative solutions. These are areas where SUEZ's innovation capabilities are the strongest.

According to China's 15th Five-Year Plan, carbon intensity will decrease by 17%, energy consumption in the industrial sector will be reduced by at least 10%, and 500 zero-carbon factories will be built by 2030 compared to 2025. These goals align closely with SUEZ's business plans, providing clear application scenarios for our technological innovation in China.

Our Innovation Focus

Against this market backdrop, SUEZ's innovation in Asia will focus on three priorities, covering sectors such as water, waste, and digital solutions:

Respond to new treatment demands for emerging pollutants

End-to-end solutions from detection to disposal for fluoride-containing wastewater, waste, and off-gas; emerging micropollutants such as PFAS; and hard-to-treat organic wastewater.

Recover resources at higher quality

Waste-to-resource pathways for various waste streams, covering areas such as zero liquid discharge (ZLD) and reclaimed water, organic solvents and waste salts, high-value utilisation of carbon-containing waste, and fine dismantling and material recovery.

Improve operational efficiency and meet our social responsibilities

Achieve data-driven operational improvements through smart O&M and AI applications, conserve energy and reduce carbon emissions, and promote innovative applications with partners, customers, and communities.

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Our Innovation Direction

In the three key priority areas mentioned above, SUEZ has developed a multidimensional portfolio of full-value-chain innovative solutions in Asia, backed by mature core technologies.

Water Sector

Our core technologies include aerobic granular sludge, biological treatment, high-efficiency denitrification, and seawater desalination. These technologies can be used to ensure water supply, treat advanced industrial wastewater and municipal wastewater, and develop alternative water sources.

Waste Sector

Our core technologies cover waste salt, waste-to-energy, tailing slag, organic solvent recovery, EV battery and PV panel recycling. We provide a complete path from treatment to resource recovery for various types of waste.

Digitalisation and Smart Management

Our core technologies include smart water meters, AI-powered acoustic leak detection, and GIS network management. These help customers achieve data-driven operational efficiency gains and emissions reductions.

From China to the Broader Asia

Solutions developed for high-density industrial parks and stringent emission standards in China can serve as valuable reference cases for other markets in the region. SUEZ is synthesising these success stories to provide replicable technological pathways and business models for Southeast Asia and other Belt and Road countries, helping emerging markets advance in the green economy.

06

Future Innovation Roadmap

Innovation is more than the driving force behind SUEZ's technological expertise. It is also a lever for competitiveness. By optimising energy and reagent consumption, reducing operating costs and lowering capital-intensive infrastructure expenditure, we can deliver more competitive solutions and provide better support to our customers in an increasingly competitive market.

Looking ahead, SUEZ is advancing multiple innovations simultaneously in France and China. In France, our global Centre of Excellence is dedicated to solving the most pressing environmental problems. In China, our seven R&D centres focus on environmental protection, resources, and smart technologies. Specially in the water and waste sectors.

These R&D pipelines serve not only SUEZ's own green transition agenda, but also support the green development of other industries and wider society. These priorities demonstrate how SUEZ is responding to future environmental challenges by driving innovations based on science and creating value through practical applications. These capabilities bolster our confidence in creating opportunities in the green transition.

Water sector

PFAS removal is currently one of our R&D priorities as it directly affects public safety and well-being. Technologies such as seawater desalination, removal of special pollutants from industrial wastewater, and ZLD will further contribute to China's green development.

Waste sector

In addition to our mature hazardous waste business, we are pioneering new technologies in areas such as organic solvent recovery, waste salt, and EV battery and PV panel recycling. Through Sino-French cooperation, we are driving ecological transformation in China and around the globe.

07

Key Reference Cases

Solutions for Industrial Parks

Pollution Reduction at Source:

Application of "Embedded" WWTP Design

Through systematic planning and innovative technology, we control pollutants at the source and recover resources from waste, thereby helping our customers reduce their total pollutant discharges, waste disposal costs and carbon emissions.

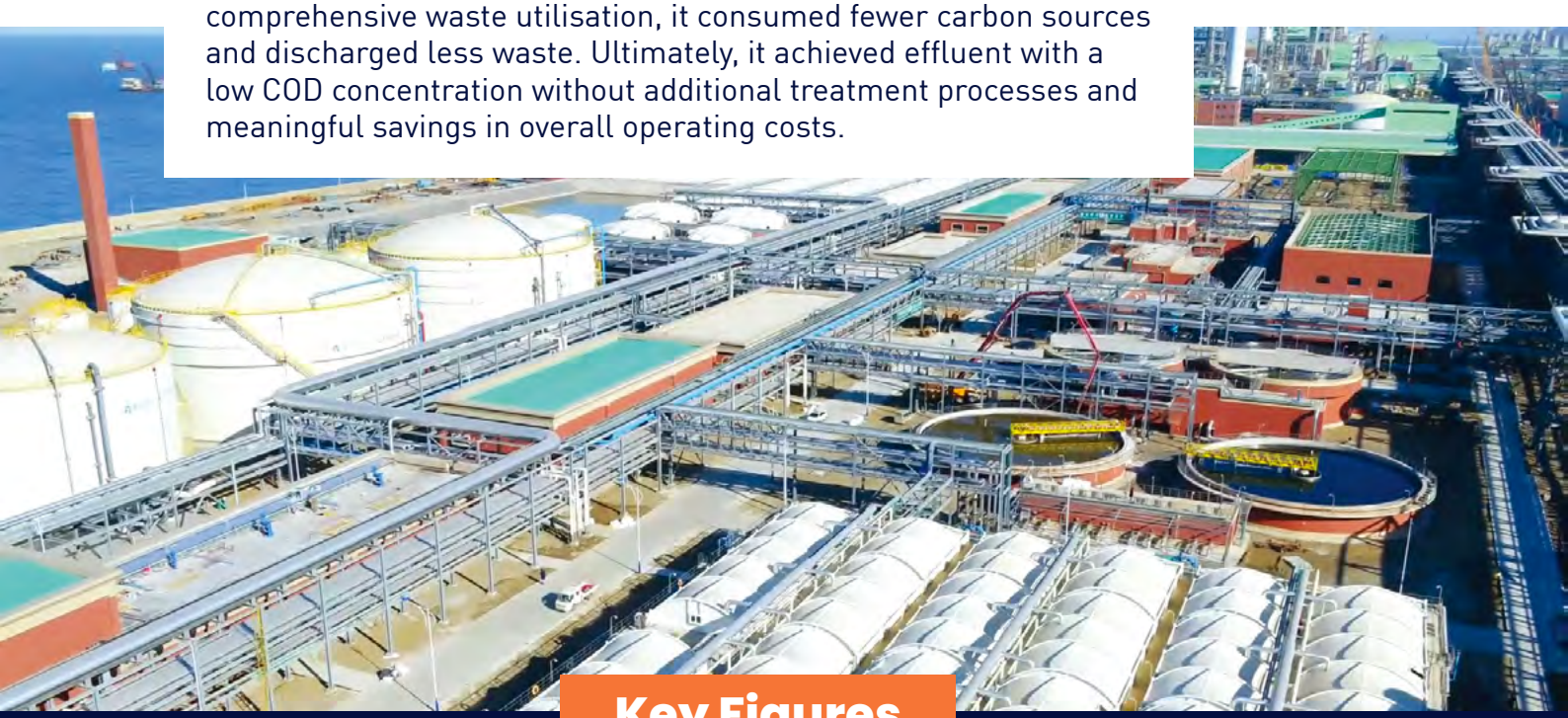
This innovative solution has already been deployed in Shanghai Chemical Industry Park (SCIP), multiple petrochemical projects in Jiangsu, and a petrochemical project in Dalian.

Rationale for Action

Located in the Lianyungang Petrochemical Industrial Base in Jiangsu Province, this is one of the largest single-process integrated refining and chemical projects in China. The facility treats 79,200 m^3 of wastewater per day, with an 84% wastewater reuse rate - the highest in the industry. It enforces the strictest wastewater discharge standards in China, requiring a COD concentration of less than 30 mg/L. The main challenge facing this project was complying with stringent wastewater discharge standards while reducing overall energy and chemical consumption.

Innovation Initiatives

SUEZ provided the project with an integrated solution, covering wastewater treatment, reuse, and treatment of final concentrated brine to meet discharge standards. Instead of the conventional aeration grid, it used an innovative cyclone aeration process and a high-performance bioreactor to replace part of the ozone oxidation, effectively reducing energy consumption. At the same time, through comprehensive waste utilisation, it consumed fewer carbon sources and discharged less waste. Ultimately, it achieved effluent with a low COD concentration without additional treatment processes and meaningful savings in overall operating costs.



Key Figures

70 m^3/year
COD emission reduction

8,000 m^3/year
CO_2 reduction

1,650 m^3/year
Hazardous waste reduction

14 million m^3/year
Freshwater savings

1,400 m^3/year
Reduced consumption of carbon sources

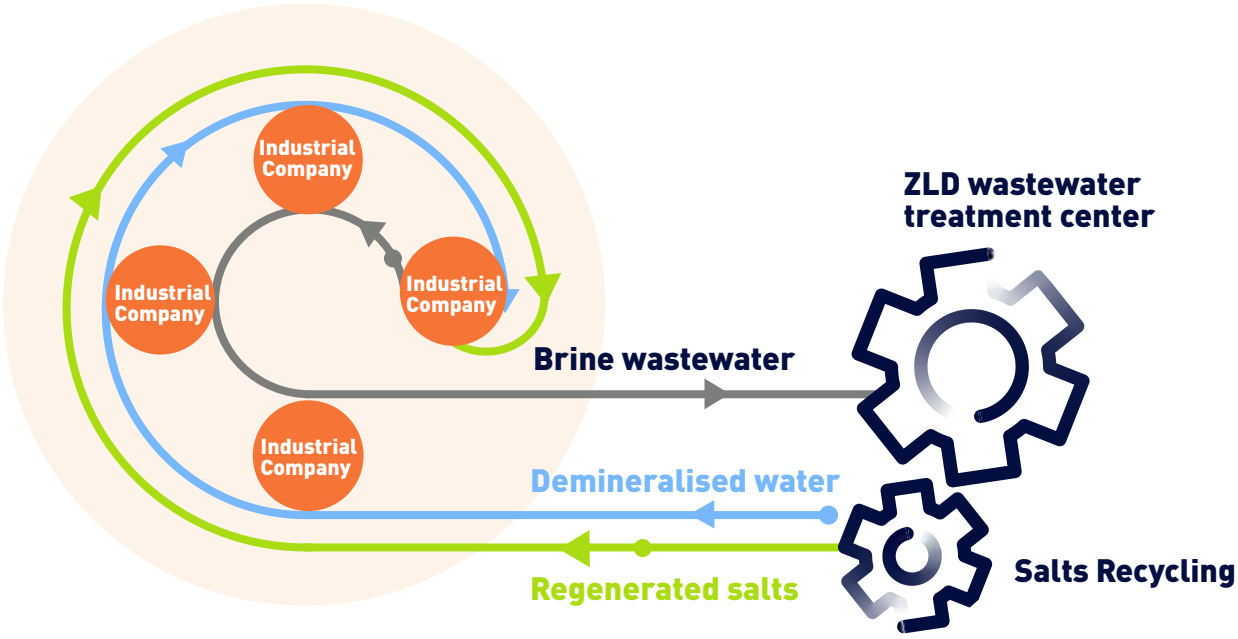
Zero Liquid Discharge and Salt Recycling:

100% Reuse of Industrial Wastewater and High-value Transformation of Mixed Salts

The integration of zero liquid discharge (ZLD) and salts recycling is the foundation for circular industrial parks. SUEZ deeply integrates centralised ZLD treatment technology for high-salinity industrial wastewater with systematic salt recycling technology, connecting the entire process technology cycle to address the salt discharge pain points and resource recycling needs of industrial parks and enterprises, and helping our customers build a sustainable industrial water cycle.

Rationale for Action

Conventional high-salinity wastewater treatment technologies generally pose dual challenges for enterprises: high treatment costs and difficulty in disposing of waste salts. At the same time, with increasingly stringent environmental regulations and the transition to a circular economy, industrial parks and enterprises are facing the burden of zero liquid discharge. They are seeking to move beyond the traditional end-of-pipe treatment paradigm and turn environmental compliance from a cost into a value-generating opportunity, thus making the leap from regulatory compliance to a true resource circularity.



Innovation Initiatives

SUEZ's core technology modules of ZLD wastewater treatment and salts recycling maximise resource recovery through the efficient alignment of multi-unit processes.

ZLD Wastewater Treatment Module

This treatment process is ideal for removing a wide variety of refractory industrial pollutants, heavy metals, silica, fluoride, and hardness. It minimises the introduction of inorganic agents throughout the process and is designed with low energy consumption as a core principle. The result is stable production of high-quality demineralised water for reuse.

Total Solution for Salts Recovery Module

By integrating thermal and aqueous decontamination technologies, and leveraging a multi-stage combined process, it refines sodium chloride, achieving process synergy with traditional chlor-alkali and soda ash industries. At the same time, Na_2SO_4 is transformed into high-value products through a chemical process, significantly improving the recovery rate of crystalline salts.

Emerging Pollutant Control:

Ensuring a Safe Water Environment from Pollutant Detection to Destruction

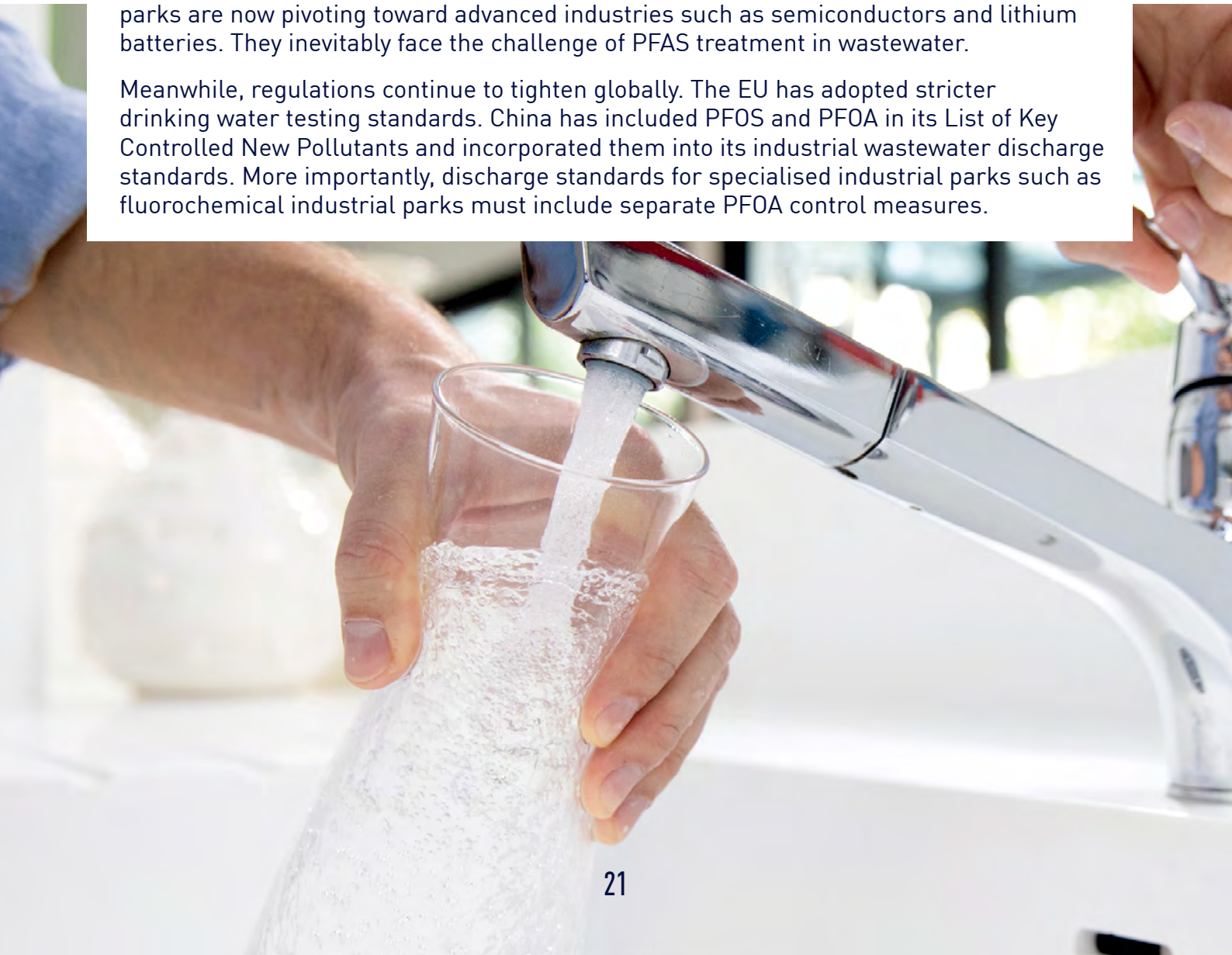
Targeting the challenges of treating emerging pollutants, such as PFAS, SUEZ has built a comprehensive technology portfolio covering the entire treatment process, providing customers with end-to-end services encompassing detection, treatment, disposal and destruction, effectively mitigating the threat of emerging pollutants in wastewater, drinking water, and sludge.

Rationale for Action

PFAS are known as “forever chemicals” due to their extremely high chemical stability. They are widely used in industrial solvents, aqueous film-forming foams,and consumer products. As a typical class of micropollutants, PFAS in soil and water sources pose potential threats to the environment and human health.

China is the world’s largest producer of fluorochemicals. China’s fluorochemical industrial parks are now pivoting toward advanced industries such as semiconductors and lithium batteries. They inevitably face the challenge of PFAS treatment in wastewater.

Meanwhile, regulations continue to tighten globally. The EU has adopted stricter drinking water testing standards. China has included PFOS and PFOA in its List of Key Controlled New Pollutants and incorporated them into its industrial wastewater discharge standards. More importantly, discharge standards for specialised industrial parks such as fluorochemical industrial parks must include separate PFOA control measures.

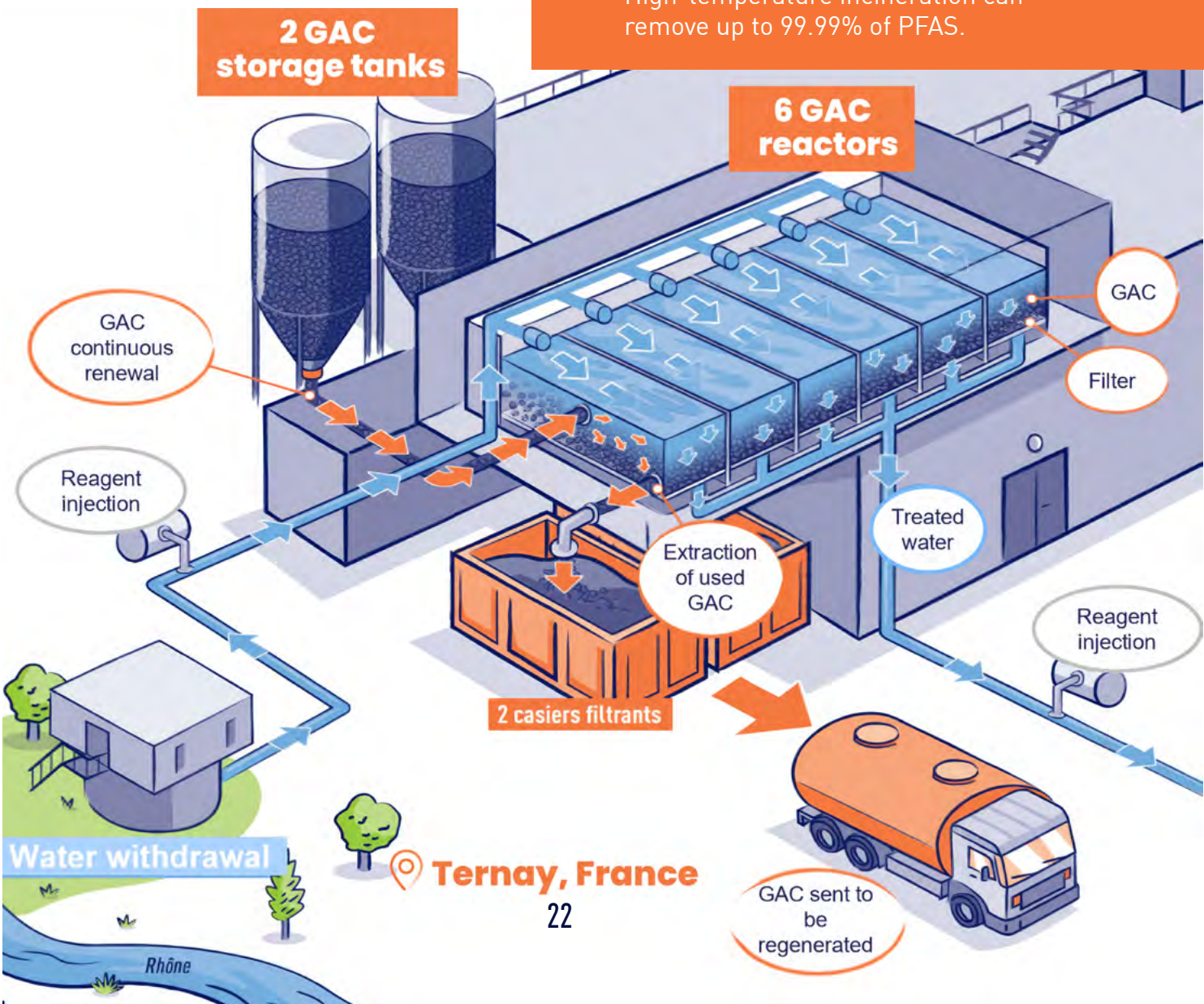


Innovation Initiatives

CIRSEE, SUEZ's International Water and Environmental Research Centre, has been working on PFAS treatment technologies for over a decade, investing significant R&D resources in the past five years. Currently, SUEZ holds approximately 15 patents related to PFAS analysis and treatment, covering the detection of over 60 PFAS substances in water. Its detection capacity is three times the requirement of current European regulations, and it has performed over 100,000 PFAS analyses globally.In China, SUEZ, together with its partners, has established China's first R&D centre for fluoride pollution control, focusing on efficient, energy-saving, and low-cost solutions for fluoride pollution control and the recovery and reuse of fluorine. Treatment technologies include activated carbon, resin, and low-pressure reverse osmosis, which can be used alone or in combination to ensure that the effluent meets the standards.

SUEZ's First Commercial PFAS Treatment Project in France: The Ternay Drinking Water Project

- **PFAS detection**
  The centre can detect 24 representative PFAS molecules in water, with a detection limit as low as 0.9 ng/L.
- **Destruction**
  High-temperature incineration can remove up to 99.99% of PFAS.



Low-carbon Circularity:

From Accurate Accounting to Ecological Benefits, SUEZ Empowers the Low-carbon and Circular Transition of Industrial Parks

SUEZ's greenhouse gas (GHG) reduction solutions leverage its own activities to help industrial parks establish systematic decarbonisation pathways. Through emission accounting tools and nature-based solutions, SUEZ provides a credible data foundation for targeted policy interventions while leveraging the power of nature to optimise and enhance environmental value.

Rationale for Action

Faced with the Dual Carbon goals and increasingly stringent environmental policies, industrial parks urgently need to shift from piecemeal emissions reduction to nature-positive growth. Accurate emission accounting tools turn reduction performance into credible, visible data assets. Through nature-based solutions, ecological restoration and carbon sink improvement can go hand in hand with emissions reduction, and industrial infrastructure can be transformed into ecological assets, significantly enhancing the long-term value resilience of the park.

Innovation Initiatives

SUEZ provides water, wastewater, and hazardous waste treatment services to SCIP. Our solutions help SCIP achieve synergies between pollution reduction and decarbonisation: wastewater treatment through membrane technology enables demineralised water reuse, while hazardous waste disposal recovers energy to avoid CO_2 emissions for our customers. Through the use of sustainable energy in our operations and the development of digital and intelligent tools, SCIP Sino French has completed product carbon footprint certification for its industrial water supply, demineralised water, and domestic water supply, providing our customers with traceable sustainable water services. We have also deployed the Dragonfly Wetland, a nature-based solution, for the first time in a Chinese industrial park to purify wastewater and restore natural habitats.

Key Figures

*SUEZ in Asia 2025

920
GWh
of sustainable energy production

79
GWh
of sustainable electricity consumption

142,781
m^3 of CO_{2e}
GHG emissions avoided for the customer

Intelligent Operations:

Data-driven Automated O&M and AI Adoption to Improve Operational Efficiency

By seamlessly integrating industrial control systems, intelligent operations and maintenance and energy efficiency analysis platforms, data management systems, and intelligent hardware (e.g., inspection robots), we provide industrial parks and enterprises with systematic O&M solutions from digital architecture to intelligent decision-making. These solutions have been deployed in multiple water projects in Taixing, SCIP, Macao, and Chongqing, helping customers improve operational efficiency and optimise costs.

Rationale for Action

The operational complexity of water and waste facilities is increasing, and traditional models of manual O&M are struggling to meet the demands for real-time monitoring, energy optimisation, and predictive maintenance. Customers need to know "whether the equipment is operating," but more importantly, "whether the operation is efficient and how potential issues can be anticipated, and how costs can be optimised." This requires an integrated intelligent O&M system, encompassing industrial control, data, and decision-making.

> At the industrial management level

the SCADA 2.0 system uses a standard scoring system to quantitatively assess the operational status of facilities, achieving real-time monitoring and automated control of the entire plant.

> At the data management level

the DATA 2.0 platform integrates BI and data management, and its energy efficiency analysis software has been deployed in multiple JVs. Through real-time collection and analysis of energy consumption data, it helps customers optimise operating costs.

> At the operation and maintenance execution level

the KPI evaluation system enables dynamic evaluation across dimensions such as equipment status, energy efficiency, and maintenance response to support preventive maintenance decisions.

Innovation Initiatives

SUEZ systematically applies its industrial control management system, intelligent O&M and energy efficiency analysis platform, data management system, and smart hardware to industrial parks and customers.

07 Key Reference Cases

Biofactory

Wastewater Treatment:

AGS and Enhanced Biological Treatment

By employing next-generation aerobic granular sludge (AGS) technology (Cyclor® Turbo) and enhanced biological treatment (Biodense™), we help municipal and industrial customers achieve rapid upgrades, in-situ expansions, and operating cost optimisation for their wastewater treatment plants. This innovative solution has been successfully deployed in the Changshu Binjiang WWTP Project.

Rationale for Action

WWTPs operate under multiple constraints, including increasingly stringent effluent standards, increased treatment demand, and continuously rising energy and chemical costs. Changing conventional processes often involves large-scale civil engineering, long construction periods, and high upfront costs.

Customers prefer an upgrade path with less civil engineering, quick results, and low costs, one that can increase treatment capacity and reduce opex without expanding the footprint.

Innovation Initiatives

SUEZ's first Cyclor® Turbo engineering project in China was at the Second WWTP in the Changshu Economic and Technological Development Zone.

The Cyclor® Turbo system can reliably keep the total phosphorus in the effluent below 0.2 mg/L without the need for chemical phosphorus removal agents, while achieving effluent COD below 30 mg/L, total nitrogen below 10 mg/L, ammonia nitrogen below 1 mg/L, and TSS below 15 mg/L, with the effluent water quality exceeding the design specifications on all counts.

This solution can be delivered within 6 months, bringing effluent quality up to standards in just 10 days, reaching 40% granulation within 2 months, and increasing the treatment capacity by more than 50%. At the same time, it requires zero chemical phosphorus removal reagents and reduces electricity costs by more than 10%. For in-situ upgrades and capacity expansion, the Biodense™ enhanced biological treatment technology can result in a 30%-40% capacity increase without increasing the footprint.

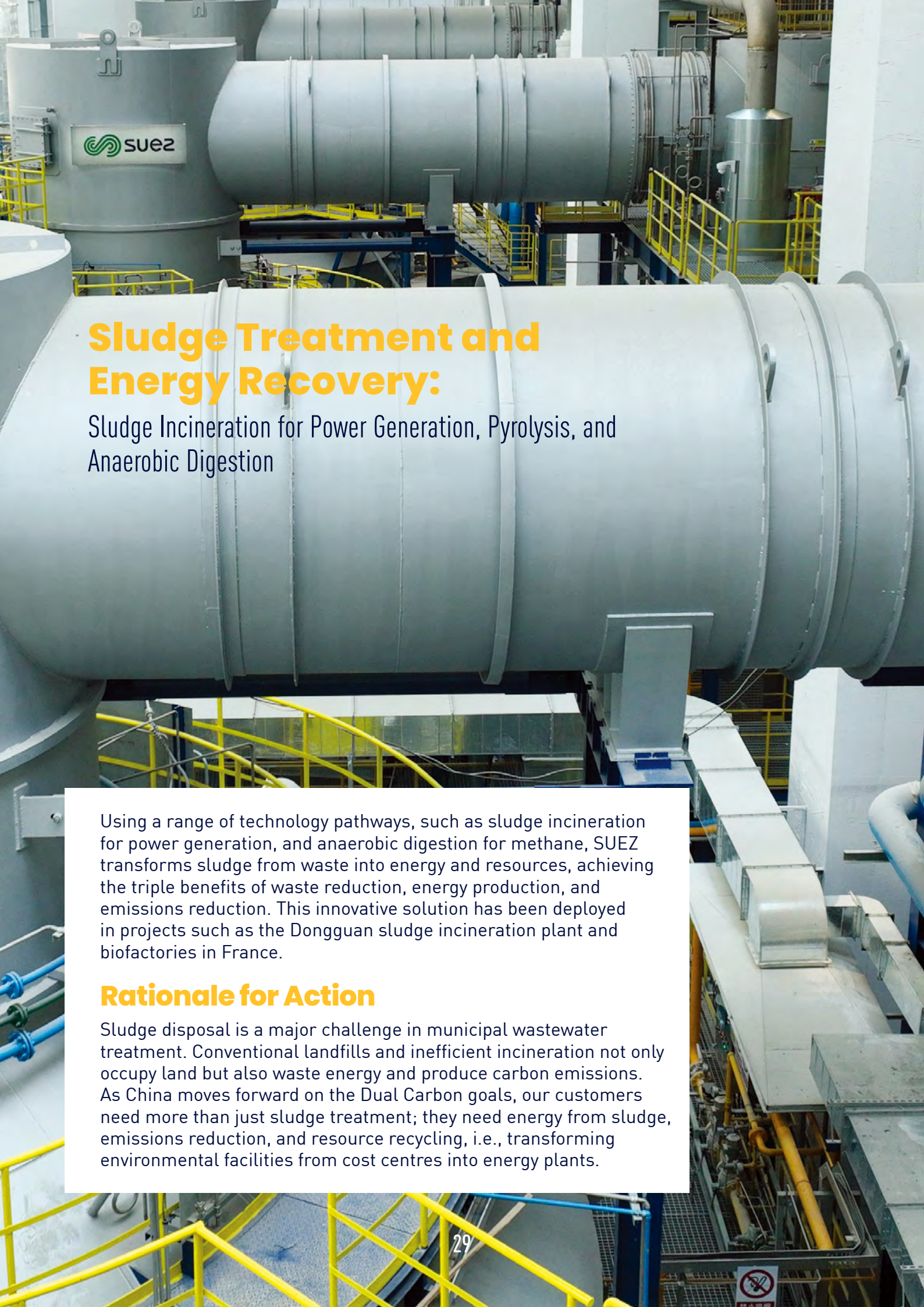
Key Figures

8,000 m³/day
Cyclor® Turbo treatment capacity

>50%
Treatment capacity increased by

>10%
Electricity cost savings

30%-40%
In-situ capacity expansion (without increasing the footprint)



Sludge Treatment and Energy Recovery:

Sludge Incineration for Power Generation, Pyrolysis, and Anaerobic Digestion

Using a range of technology pathways, such as sludge incineration for power generation, and anaerobic digestion for methane, SUEZ transforms sludge from waste into energy and resources, achieving the triple benefits of waste reduction, energy production, and emissions reduction. This innovative solution has been deployed in projects such as the Dongguan sludge incineration plant and biofactories in France.

Rationale for Action

Sludge disposal is a major challenge in municipal wastewater treatment. Conventional landfills and inefficient incineration not only occupy land but also waste energy and produce carbon emissions. As China moves forward on the Dual Carbon goals, our customers need more than just sludge treatment; they need energy from sludge, emissions reduction, and resource recycling, i.e., transforming environmental facilities from cost centres into energy plants.

Key Figures

6.5 seconds
Flue gas residence time
(3 times the EU standard)

0 liquid discharge

>50%
Electricity self-sufficiency rate

CO2
55,000 m^3
Annual CO_2 reduction

Innovation Initiatives

Dongguan sludge incineration plant: The project adopts a two-stage dust removal, desulfurisation, and denitrification process, currently the most advanced configuration in the Chinese sludge treatment industry. With 5 incineration lines, the plant treats 2,000 m^3 of sludge per day (based on a 60% moisture content) from 50 municipal WWTPs in Dongguan City. It is one of the largest and most advanced sludge treatment projects in China. The incineration process achieves a flue gas residence time of 6.5 seconds (three times the EU standard), zero liquid discharge, and full recycling of ash. Operating at full capacity, the plant will generate approximately 96 million kWh of electricity annually, achieving over 50% power self-sufficiency for the plant area and reducing CO_2 emissions by 55,000 m^3 annually.

As a flagship project commemorating the 60th anniversary of Sino-French diplomatic relations, the RMB 1.918-billion project set a new benchmark for synergistic waste reduction, emissions reduction, and resource recycling in sludge treatment.

The Pau-Lescar Biofactory in France: The project adopts anaerobic digestion technology to produce biomethane from sludge treatment. All the CO_2 emitted is transformed into synthetic methane. Simultaneously, the project produces Biocoal through hydrothermal carbonisation ("ultra-dewatering"), which can either be returned to the soil or turned into energy through combustion.

When completed, the plant's emissions will be 50% lower than today, avoiding approximately 5,000 m^3 of CO_2 each year, and it will develop 10 resources and green energy sources.

Additionally, SUEZ's Pyrolis® S2B process reduces the volume of biosolids by up to 80%, significantly reducing the cost of off-site disposal.

Organic Waste Recovery:

From Energy Recovery to Bio-based Materials

Through conventional and next-generation anaerobic digestion (AD) technologies, organic waste (e.g., fruit and vegetable scraps, food industry wastewater and residues, and kitchen waste) is transformed into green energy and high-value bio-based materials (e.g., PLA and PHA), upgrading the process from energy recovery to materials manufacturing.

Rationale for Action

Enormous quantities of organic waste (e.g., kitchen waste, fruit and vegetable scraps, and food processing residues) are traditionally placed in landfills or simply composted, failing to fully unlock their resource value. At the same time, the environmental threats of fossil-based plastics are becoming increasingly serious, leading to fast-growing commercial demand for biodegradable bio-based materials. Customers need a technological solution to turn organic waste from an environmental cost into green materials, solving waste disposal problems while creating new commercial value.

Innovation Initiatives

SUEZ has many proven cases of its AD technologies in China and globally. Currently, we are upgrading from conventional AD to advanced AD — the latter produces bioplastics (e.g., PLA and PHA) that can replace fossil-based plastics, significantly reducing emissions and elevating the value of organic waste from energy recovery to high-value material manufacturing. Advanced AD technology has already been deployed in a pilot demonstration project in France.

Advanced AD pilot demonstration project in France (under construction)

Digital Factory:

Autonomous Lights-Out Water Plant

SUEZ's autonomous, lights-out water plant solution upgrades traditional "human-dependent, reactive, and experience-driven" water treatment plants to a modern "AI-enabled, data-driven, and minimally human-dependent" paradigm, systematically addressing the triple challenges of safety, cost, and efficiency.

Rationale for Action

Traditional WTP operations rely heavily on operator experience and 24-hour monitoring. They come with challenges such as high labor, energy, and chemical costs, and slow troubleshooting response. Meanwhile, maturing digital technology and AI have made “unmanned autonomous operation” possible. Customers need a systematic upgrade solution from reactive to proactive decision-making.

Innovation Initiatives

SUEZ's digital factory solution has been successfully deployed in a seawater desalination project in a large chemical industrial park and Macao Water WTPs. Relying on intelligent process modules, the system achieves fully automated process regulation and autonomous operation, replacing experience-based manual intervention with data-driven decisions. The solution includes core capabilities such as unattended operation, autonomous operation, automatic regulation, and intelligent process modules.

07

Key Reference Cases

Water Scarcity

Water Supply Safety:

Full-process Assurance from Source to Tap

Based on the new approach of "source control - centralised pretreatment - safe water supply for megacities," we integrate treatment processes to remove algae and odour compounds (2-MIB and geosmin), and emerging pollutants such as PFAS, ensuring a safe and reliable municipal water supply.

Rationale for Action

While securing inter-basin water transfer for Tianjin, the Luanhe River Diversion Project has faced challenges related to algal blooms and the removal of odour compounds, which must be addressed to ensure water safety. Under increasingly stringent national standards, it has become critical to control algal bloom while removing odour compounds such as 2-MIB and geosmin in drinking water.

Additionally, emerging pollutants such as PFAS have been included in the List of New Pollutants for Priority Control, yet conventional treatment processes are unable to effectively remove them.

Innovation Initiatives

Facing the complex challenge of excessive algae and odor compounds in high-algae water sources, SUEZ moved away from the reactive end-of-pipe treatment model and utilised high-rate dissolved air flotation (DAF), carbon pulse clarifier, and low-dose ozone oxidation as core process units, flexibly adapting the treatment processes according to changes in raw water quality. This reduces the cost of emergency treatment and advanced treatment at downstream WTPs while ensuring the safety of the water supply.

The Luanhe Pretreatment project, currently under construction, has a treatment capacity of 1.5 million m^3 per day. Once completed, it will become China's largest raw water pretreatment facility, significantly enhancing the overall resilience and redistribution flexibility of the water supply system.

Regarding PFAS treatment, SUEZ began a modernisation project in March 2025 to incorporate a PFAS treatment system into a drinking water plant in Ternay, France. The plant's six existing activated carbon adsorption filters are equipped with Carbazur® Simplex technology to enable continuous renewal of the activated carbon. The treated water has a PFAS concentration below 60 ng/L, far below current French standards (total concentration of 20 listed PFAS <100 ng/L).

Key Figures

Luanhe pretreatment plant:

- 2-MIB removal rate: **>95%**
- effluent concentration: **<10ng/L** (better than the national standard)
- Algae removal rate: **>80%**

PFAS treatment Ternay project reduces influent PFAS concentration:

- influent concentration: **150ng/L** → effluent concentration: **<60ng/L**

Seawater Desalination:

Enabling fully automated plant-wide operations

SUEZ utilises a comprehensive intelligent control system to achieve fully automated plant-wide operations of its seawater desalination process, from seawater intake to freshwater production. Remote intervention is only required in extreme conditions, eliminating the need for on-site monitoring. The system collects and analyses hundreds of operating parameters in real time, enabling fault prediction, automatic emergency protection, and intelligent maintenance, ensuring uninterrupted and stable operation throughout the year.

This solution has been deployed at the Wanhua Penglai Seawater Desalination Project (Phase I has a treatment capacity of 100,000 m^3/day), the largest industrial membrane seawater desalination plant planned in China.

Rationale for Action

Water scarcity in coastal areas has become a prominent issue, and seawater desalination provides an important alternative source of freshwater. However, conventional seawater desalination plants rely heavily on manual operation and attendance and involve high operating costs, high energy consumption, and extensive equipment maintenance.

Customers demand solutions that offer low costs, high stability, and intelligence beyond simple water production: a shift from manual operation to autonomous operation, and from preconfigured parameters to intelligent control.

Innovation Initiatives

Relying on SUEZ's proprietary full-process intelligent control system, the entire process of seawater intake, pretreatment, membrane treatment, water quality monitoring, freshwater transfer, equipment inspection, risk self-identification, and shutdown protection is carried out autonomously without human intervention.

Intelligent adaptive energy regulation significantly reduces operating energy costs: The system can adjust pretreatment and reverse osmosis operating conditions in real time based on parameters such as seawater temperature, TDS, and turbidity, replacing the traditional preconfigured model. Having been proven in multiple projects, the system reduces overall energy consumption per ton of water by 12%-18%, helping customers achieve multiple goals of reducing energy costs and emissions and improving efficiency.

Key Figures

100%
On-site operator staff reduced

70%
Attending staff reduced

100%
Water quality compliance rate

Energy saving: The project adopts low-carbon, energy-saving and environmentally friendly processes, which can reduce operating costs by more than

15%
compared to the traditional "dual-membrane technologies."

Intelligent lifecycle maintenance extends equipment lifespan and reduces consumable costs: Unlike the traditional approach that requires extensive manual maintenance, this system intelligently rotates based on equipment runtime. Based on system data, it develops cleaning, maintenance, and replacement schedules for core consumables such as filters and membrane modules. Through precise and intelligent operation and maintenance, the lifespan of core equipment can be meaningfully extended, reducing overhaul and replacement costs, and lowering project lifecycle spending.

High operational stability: Based on real-time collection and analysis of hundreds of operating parameters (e.g., pipeline pressure, water quality indicators, flow rate, and membrane module degradation), the system enables fault prediction and real-time warning. In the event of a fault, the system automatically triggers emergency protection measures and switches to backup equipment, avoiding equipment damage, water outages, and production shutdowns caused by delayed manual inspections.

Leakage Control :

Systematic Non-Revenue Water Management

SUEZ offers a full suite of replicable, actionable, and quantifiable lifecycle management solutions for non-revenue water (NRW), systematically reducing water losses across the three dimensions of technology, management, and assessment.

Innovation Initiatives

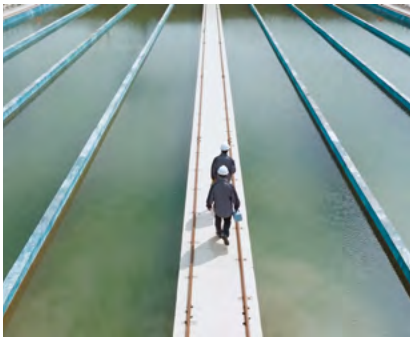
SUEZ's leakage control solution covers three dimensions: technology, management, and assessment. From leakage monitoring and location, pressure management, and metering upgrades to DMA zoning management and the establishment of performance assessment schemes, it delivers a complete lifecycle management system for NRW.

Rationale for Action

Leaks in water networks not only waste valuable resources but also result in direct economic losses for water supply companies. China's Standards for Leakage Control and Assessment of Urban Water Supply Networks require the leakage rate to stay below 9%, but many water supply companies still fall short of the national standard due to challenges such as aging networks, inefficient management, and lack of data. Customers demand not just a simple technical fix, but rather a sustainable leakage management system with a closed loop from leak location to pressure management and from metering upgrade to performance evaluation.

Reference Cases

Chongqing Water:
Asia's largest full-concession water supply project



Changshu Water:
China's longest full-concession water supply project

Key Figures

10.69%
Average NRW of the 9 SUEZ JVs (2025)

3.55%
Adjusted average leakage rate of the 9 SUEZ JVs (2025) (far below the national limit of 9%)

Reclaimed Water Reuse:

High-quality Reuse in Multiple Scenarios

We provide municipal and industrial customers with reclaimed water treatment technologies adapted for different reuse scenarios, meeting near-Class IV or even near-Class III standards in the municipal sector, and complying with in-plant or industrial park reuse standards in the industrial sector. Our diverse process portfolio achieves the optimal balance between capex and opex.

Rationale for Action

Under water scarcity constraints, reclaimed water has become an important alternative water source for municipalities and industries. However, demands for reclaimed water quality vary significantly across customers, and different standards apply for municipal landscape water, industrial cooling water, and high-end process water. Customers need a technical solution that can meet their unique water quality requirements while optimising their capex and opex.

Innovation Initiatives

In the municipal sector, SUEZ has developed a variety of combined technologies for advanced reclaimed water treatment to meet different water quality requirements ranging from near-Class IV to near-Class III.

In the industrial sector, we offer segregated or combined treatment systems based on the characteristics of the wastewater to improve treatment efficiency and reuse rate. At the same time, we have developed the next-generation enhanced bio-activated carbon process for removing recalcitrant COD, which reduces capex and opex by about 25% compared to competing offers.

Cost advantage:
The enhanced bio-activated carbon process reduces capex and opex by approximately

25%

compared to competing offers

07 Key Reference Cases

Circular Waste Solutions

Advanced Carbon Valorisation:

Turning Carbon-containing Waste into Circular Resources

Through advanced carbon valorisation technologies, we convert carbon-containing waste into circular resources, replacing fossil-based carbon sources and helping customers address the growing pressure to decarbonise their products, fuels, and supply chains. We turn environmental challenges into strategic opportunities.

Rationale for Action

For decades, waste management was mainly about collection, treatment, and safe disposal. Today, the challenge is different: industries are under mounting pressure to decarbonise their products, fuels, and supply chains. Can the carbon contained in waste replace fossil carbon?

This question is redefining the value logic of waste management. Carbon itself has become a valuable resource, rather than just waste to be disposed of.

Innovation Initiatives

CCUS is a lever to achieve a long-term reduction in our residual CO_2 emissions, while also contributing to national targets. We have several ongoing projects in France and the UK.

Biogenic CO_2 can also become a resource to decarbonise transport (e-fuels) and other industries (agrifood, chemicals, building materials...), etc. as an alternate to CO_2 produced by burning fossil fuels.

In France, we are developing assets to capture biogenic CO_2 and use it to produce sustainable e-fuel. One project is already running near Bordeaux, on an anaerobic digestion site. There, biogenic CO_2 is liquified and sold to agricultural cooperatives, replacing fossil energy in greenhouses.

Solar Panel Recycling:

Closed-loop Recycling of Photovoltaic Waste

Recognising the unmet recycling demand and environmental risks arising from the decommissioning of solar panels, SUEZ has leveraged its own research and innovation centres and partners to develop a closed-loop solution for solar panel waste encompassing collection, dismantling, thermal treatment, sorting, refining, and chemical recovery. Beyond technological breakthroughs, we are simultaneously activating downstream markets to reshape the value path from waste to resources.

Rationale for Action

The explosive growth of the solar industry has been followed by a wave of retired products. Decommissioned solar panels contain recyclable materials such as glass, silicon, silver, and copper, but also substances with potential environmental harm. However, the current recycling process suffers from technological gaps and insufficient treatment capacity. A large number of waste solar panels have not been effectively recycled, and many retired modules still flow into informal channels.

With the continuous increase in decommissioned products and the enforcement of the Extended Producer Responsibility (EPR) regulation, the industry urgently needs a resource recovery path that covers the entire lifecycle and combines environmental compliance with commercial sustainability, rather than simple landfill or inefficient dismantling.

Innovation Initiatives

SUEZ has leveraged its own research and innovation centres and partners to develop a closed-loop solution for solar panel waste encompassing collection, dismantling, thermal treatment, sorting, refining, and chemical recovery. The Group works to implement solar panel recycling projects in Europe.

By separating high-value components and recycling every component, we achieve full-chain value management from collection and dismantling through purification to the sale of secondary materials. We adopt clean, low-carbon processes to ensure that the treatment is safe, environmentally friendly, and traceable.

Key Figures

>90%

Total recovery rate target

>95%

Aluminum recovery rate

>90%

Glass, copper, silicon, and silver recovery rate

Power Battery Recycling:

A Closed-loop Value Chain from Battery Recycling to Material Regeneration

The core of power battery recycling lies in advancing new energy development and promoting the circular economy. SUEZ provides a circular solution across the full lifecycle of battery systems, spanning system integration, energy storage systems, recycling, and material regeneration.

Rationale for Action

The fast growth of the new energy sector has led to an increase in the number of retired power batteries. Waste lithium batteries are not only an environmental risk but also a secondary source of strategic resources such as lithium, cobalt, and nickel. However, the battery recycling industry faces challenges such as high technical barriers, significant safety risks, and insufficient supply chain coordination.

Customers need more than battery disassembly; they need to maximise the value of retired batteries from recycling and pulverising through hydrometallurgy to material regeneration, forming a complete value cycle.

Innovation Initiatives

SUEZ and Eagoal New Energy Group are building a lithium battery recycling project in Changshu, Jiangsu Province, covering the recycling of retired batteries and the regeneration of key materials. The project will have a production line for recycling retired lithium batteries, as well as a digital production line for small power battery packs and energy storage battery packs. It is expected to be completed and commissioned in the second half of 2027, offering a circular lifecycle solution for lithium batteries.

The project employs advanced mechanical dismantling and intelligent sorting technologies. Its core processes encompass more than ten steps, including shredding, oxygen-free drying, coarse crushing, magnetic separation, air classification, and gravity separation. Through a fully enclosed automated production line, the project safely dismantles batteries and efficiently separates valuable materials such as copper, aluminum, and black mass, providing high-grade raw materials for downstream hydrometallurgical processes andcontributing to a closed-loop new energy value chain.

Key Figures

15,000

m^3

Annual treatment capacity of retired lithium batteries

1.5

GWh/year

Small power battery pack and energy storage battery pack production capacity

Photo credit: Getty Images; veer.com; SUEZ; SUEZ/Daniels William; SUEZ/Shanghai Pudong sludge Project, Wanhua Yantai Sea Desalination Plant Project, Dongguan Sludge Incineration Project, Macao Water, Chongqing Sino French, Changshu Sino French, SCIP Sino French, Jiangsu Sino French, Suzhou Sino French, SCIP SITA, Hengli Group, Wanhua Chemical Group,Beijing Drainage Group

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