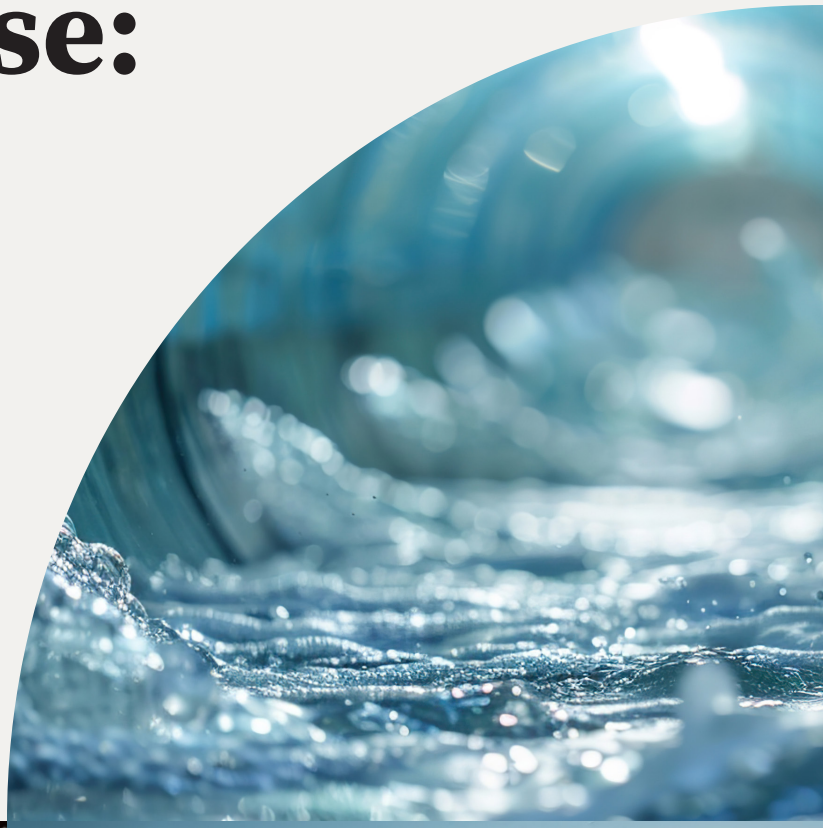
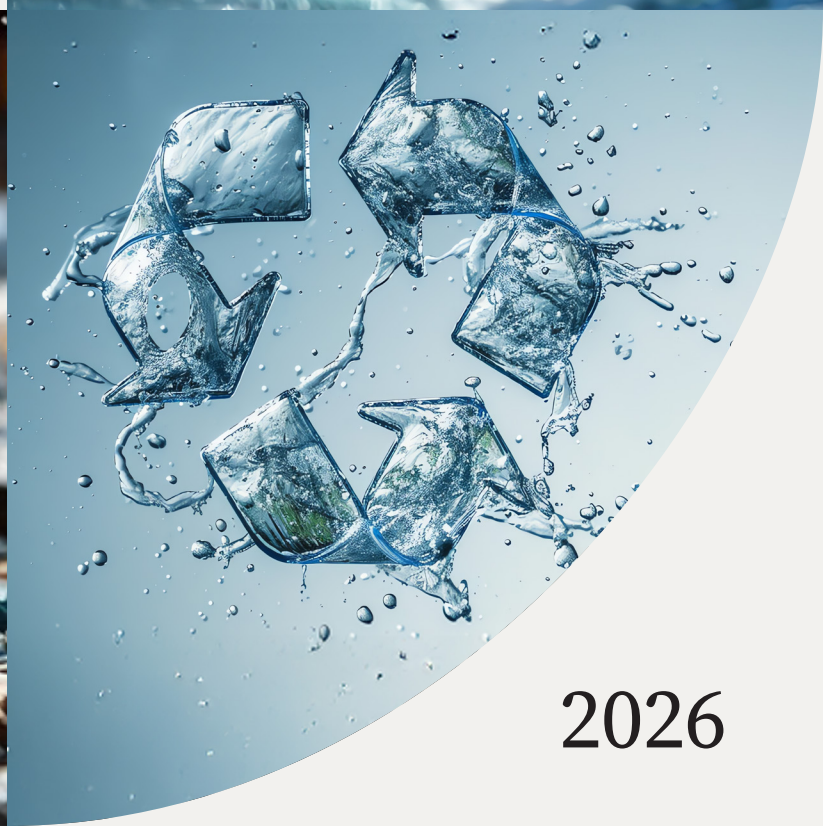
A Pathway to Potable Reuse:

A Global Status Update and Strategic Outlook





2026

Foreword

Water is no longer a passive backdrop to development; it is a defining force shaping our economies, cities, and futures. As Secretary General of the International Desalination and Reuse Association (IDRA), I have seen how communities are reimagining water not just as a resource to manage, but as an opportunity to innovate.

This global fact sheet explores the pathway from non-potable reuse to Direct Potable Reuse (DPR), a pivotal next step in water's evolution. DPR transforms wastewater into high-quality drinking water through rigorous science, strong governance, and public trust. From Windhoek to California and Singapore to São Paulo, communities are advancing regulatory frameworks and technologies that make safe, scalable reuse possible.

At IDRA, we view DPR not simply as a technical solution, but as a tool for resilience, equity, and sustainability. Its success will depend on how responsibly we regulate, communicate, and build capacity to implement it.

This publication reflects the work of our global network of engineers, scientists, policymakers, and utilities, and provides a clear view of where DPR stands in 2025 and where it is headed.

I hope it serves as a catalyst for partnership and bold action. The future of water is circular, and with DPR, we are closing the loop.

With appreciation to our colleagues, John Hanula, Amy Taylor, and Isaac Banks, for their valued support in the development of this paper.

Thank you.

Best regards,

Shannon McCarthy
Secretary General, IDRA

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Global Strategic Response

As global water scarcity deepens, DPR, the advanced treatment of municipal wastewater for direct integration into drinking water systems, is emerging as a critical strategy for enhancing urban water security, adapting to climate extremes, and supporting circular economies. Operational DPR systems exist in Windhoek, Namibia, and U.S. cities, with formal planning underway in over a half-dozen states and more than 30 countries.

The global market for water reuse was valued at USD 17.6 billion in 2024 and is projected to reach USD 30.6 billion by 2030. Potable reuse, although a smaller segment, is steadily expanding as urban areas confront chronic water stress. The current global capacity for advanced municipal wastewater reuse surpasses 40 billion cubic meters annually (approximately 11% of treated wastewater), with DPR anticipated to claim a larger share in the coming decade.

The IDRA recognizes DPR as an essential, scientifically validated solution to global water scarcity, advocating for its strategic adoption under rigorous public health safeguards, transparent governance, and proactive community engagement.

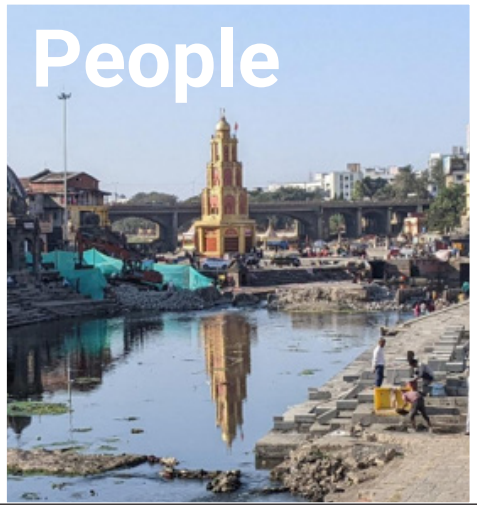
> *"Water scarcity is a silent bomb, which has far less visibility than those that destroy buildings, but is no less lethal."*
>
> UN reporter Agudo, 2024

Water for...

The Consequences Are Real

The likely impacts from lack of reliable water supplies have been better defined than the predictability of current resources in the face of climate-driven changes. This paradigm can be mapped across the nexus of water for human consumption, for generating energy, for producing food from crops and livestock, for industrial production, and to maintain sustainable environmental flows that protect our ecosystem.

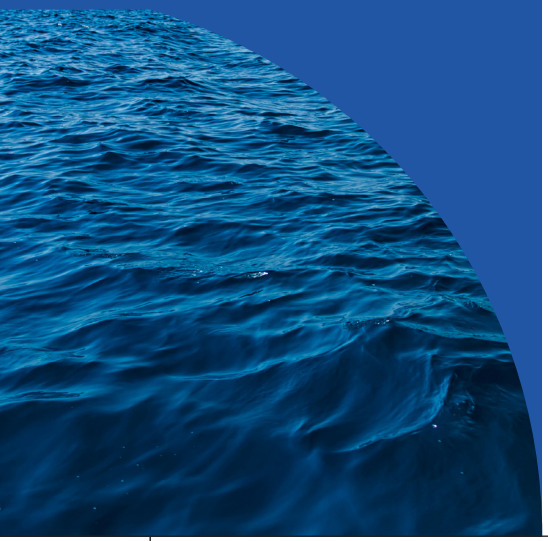
- Lost food production from reductions in agricultural yields will increase hunger
- Inability to meet projected population growth redistribution
- Economic impact from limitations to industrial development and growth
- Negative impacts from reduced, dedicated environmental flows



IDRA's Position on DPR

IDRA recognizes DPR as a scientifically validated, viable solution to help address the world's accelerating water scarcity and urban supply security challenges. DPR, when properly planned, regulated, and operated, offers a safe, climate-resilient, and circular pathway to expand drinking water supply in all countries worldwide.

Taking recycling of wastewater to DPR offers a transformative opportunity to protect watersheds and marine zones from overloading, especially in areas with sensitive ecosystems such as coral reefs and river deltas.



IDRA supports the adoption of DPR where:

- **Public health protection** is ensured through robust risk-based frameworks aligned with World Health Organization (WHO) guidelines;
- **Technological performance** is demonstrated through validated multi-barrier systems and real-time monitoring;
- **Transparent regulation** is in place, backed by institutional capacity and interagency coordination; and
- **Community engagement and public trust** are central to implementation strategies.

DPR is not a universal solution. It must be evaluated in the context of:

- Local hydrology and source water conditions
- Institutional readiness and governance capacity
- Competing water needs and existing infrastructure
- Social acceptance and economic feasibility

However, where conditions align, IDRA views DPR as a strategic tool for:

- Increasing urban water supply reliability
- Reducing pressure on freshwater ecosystems
- Advancing the circular water economy
- Reducing pollution in aquatic ecosystems
- Enhancing resilience in the face of climate extremes

As the global voice for desalination and water reuse, IDRA encourages:

- Collaborative research and demonstration projects
- Regulatory innovation and policy exchange
- Capacity-building in underserved regions
- Inclusion of DPR in long-term water security and climate adaptation strategies and planning

IDRA will continue to work with governments, utilities, development agencies, and its global membership to ensure that potable reuse (including DPR) is pursued with **scientific integrity, public confidence**, and a **commitment to equitable access**.

Economic, Social, and Environmental Benefits

As global water scarcity accelerates, DPR is increasingly viewed not only as a technological solution but also as a strategic asset for urban resilience, cost efficiency, and sustainable development. Countries exploring DPR cite clear multi-dimensional benefits, ranging from infrastructure optimization to ecosystem restoration and social equity. The following summarizes those benefits, supported by global case evidence and high-level international analysis.

Economic

DPR offers economically viable water solutions by leveraging existing wastewater infrastructure, reducing lifecycle costs compared to seawater desalination or imported water. For instance, El Paso's forthcoming DPR facility is projected to deliver water at lifecycle costs 25–35% lower than alternative supplies. Studies in Australia and South Africa further confirm DPR's economic advantages, particularly in inland or energy-constrained areas.

Environmental

DPR significantly contributes to circular water management by eliminating wastewater discharge, reducing freshwater extraction, and enhancing ecosystem health. Notably, Singapore's NEWater initiative substantially decreased environmental impacts, reinforcing DPR's role in ecosystem preservation. The United Nations (UN) Environment Programme identifies DPR as transformative for protecting vulnerable watersheds and marine environments.

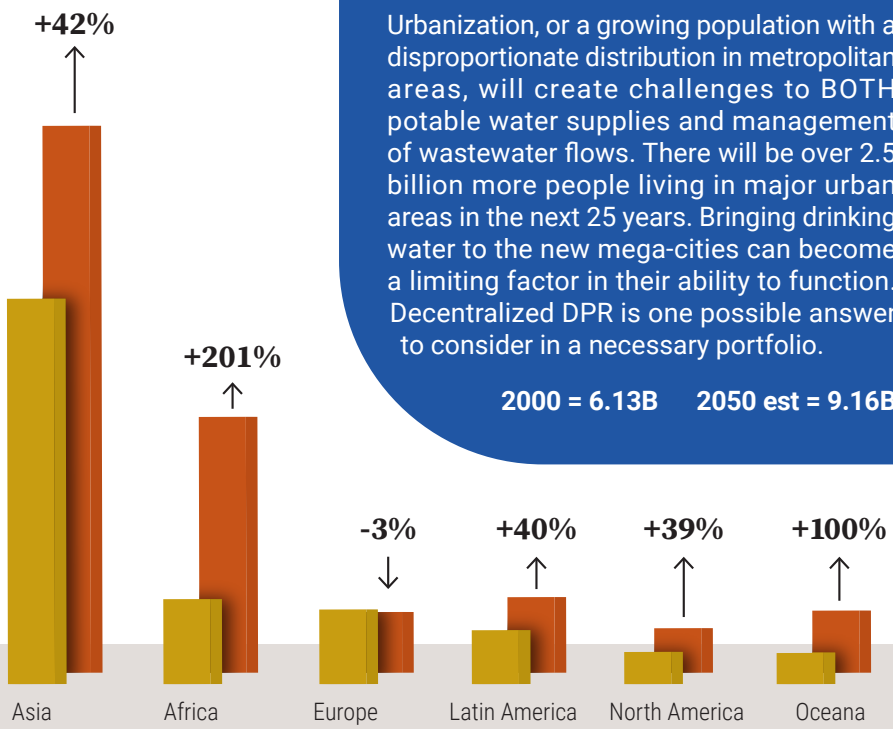
Social

DPR ensures equitable, continuous access to high-quality drinking water, supporting societal resilience during droughts and emergencies. In cities such as Windhoek and San Diego, DPR systems are integral to emergency response frameworks. Singapore's NEWater experience demonstrates substantial public acceptance growth through proactive, transparent community engagement and education.

Meeting the Needs of Urbanization

Urbanization will have gone from less than 40% to nearly 70% in Global Cites between 2000 and 2050!

United Nations World Urbanization Prospects 2025



Growth in urban areas with over 250,000 population 2000-2050

Future Trends

Urbanization, or a growing population with a disproportionate distribution in metropolitan areas, will create challenges to BOTH potable water supplies and management of wastewater flows. There will be over 2.5 billion more people living in major urban areas in the next 25 years. Bringing drinking water to the new mega-cities can become a limiting factor in their ability to function. Decentralized DPR is one possible answer to consider in a necessary portfolio.

2000 = 6.13B **2050 est = 9.16B**

Technological and Regulatory Landscape

The global deployment of DPR is driven by a convergence of mature treatment technologies, advanced monitoring systems, and evolving regulatory frameworks that address public health protection, risk management, and operational transparency. While the technical capability for safe DPR exists today, enabling widespread adoption depends on governance clarity, performance-based standards, and the institutional capacity to manage risks and build public trust.

Core Technologies for DPR

DPR technology primarily utilizes multi-barrier treatment comprising Microfiltration/Ultrafiltration (MF/UF), Reverse Osmosis (RO), Advanced Oxidation Processes (AOPs), and activated carbon/ disinfection. Each stage effectively addresses specific contaminants, ensuring compliance with stringent drinking water standards. Emerging innovations include membrane bioreactors, real-time pathogen detection via biosensors, AI-driven controls, and modular DPR units suitable for decentralized deployment.

Regulatory Frameworks and Guidelines

Robust regulatory frameworks underpin successful DPR adoption, characterized by real-time monitoring, stringent validation protocols, and transparent public oversight. California, Texas, and Namibia exemplify established regulatory practices. Meanwhile, countries like Singapore, Australia, South Africa, and Saudi Arabia are actively piloting or formulating DPR-specific guidelines, often aligned with WHO standards. Persistent challenges include fragmented regulatory oversight and gaps in public trust and workforce readiness.

Principal Drivers and Restraining Forces

DPR is gaining strategic attention as water stress, urban growth, and climate extremes increasingly strain freshwater availability worldwide. While DPR remains relatively rare compared to indirect reuse or desalination, the last five years have marked a turning point, with significant movement across policy, regulation, piloting, and infrastructure development.

DPR implementation varies significantly worldwide:

- **North America:** U.S. leads with operational DPR facilities in Texas and California, supported by comprehensive state and federal regulations.
- **Europe:** Spain and Portugal are evaluating DPR under emerging EU regulations, though large-scale adoption remains limited.
- **Africa:** Namibia's long-standing Windhoek system remains exemplary. South Africa rapidly progresses with infrastructure development in Cape Town.
- **Middle East:** UAE, Saudi Arabia, and Oman are actively assessing DPR within broader water resilience strategies.
- **Central/South America and the Caribbean:** Chile and Brazil lead DPR planning initiatives, primarily as drought response. Other nations currently focus on agricultural or industrial reuse.
- **Asia:** Singapore leads with NEWater; China, India, and South Korea pursue DPR pilots and feasibility studies. Japan and others are exploring decentralized reuse options.
- **Oceania:** Australia heavily invests in DPR research and readiness, with no full-scale operations yet. New Zealand explores DPR within broader climate adaptation strategies.

Conclusion and Strategic Outlook

DPR represents a scientifically robust, economically sensible, and environmentally essential solution to global water scarcity challenges. Its broader acceptance and effective implementation depend significantly on strengthened regulatory frameworks, public engagement, technological innovation, and international collaboration. The IDRA actively advocates for DPR, emphasizing scientific rigor, transparency, and equitable water access to achieve global water resilience.

Tailwinds and Headwinds to Water Solutions

- Scarcity in fresh water of acceptable quality
- Scarcity in access to water services
- Scarcity due to the lack of adequate infrastructure
- Cultural acceptance of non-traditional resources
- Lack of funding to implement

***UN definition of Water Scarcity:** Food and Agriculture Organization of the UN - 2008

Global Leader in Scale and Regulation

The **United States** is seen as a global leader in DPR development, with several operational facilities, a robust regulatory framework in key states, and a growing number of cities moving from indirect to fully direct potable reuse systems. As of 2025, the U.S. is the only country actively implementing DPR across multiple jurisdictions with clear public health regulations and institutional support.

Pioneers leading the charge

Texas was the first U.S. state to approve full-scale DPR. The City of Big Spring DPR Plant, operational since 2013, treats 5 million gallons/day and blends it directly into the municipal water system. The El Paso Advanced Water Purification Facility, set to open in 2026, will be one of the largest DPR systems in North America, supplying up to 20% of the city's drinking water using ozone, biologically activated carbon, UF, RO, and UV-AOP.

California, long a pioneer in water reuse, formally adopted comprehensive DPR regulations in December 2023, becoming the first U.S. state with a full legal framework for raw water augmentation and treated water augmentation. The Pure Water San Diego Program, currently under construction, will ultimately provide 50% of the city's water supply through a combination of indirect potable reuse (IPR and DPR).

Accelerating reuse, focus toward DPR

Colorado, Arizona, and **Florida** are also advancing DPR. Colorado finalized its DPR regulations in 2023, including pathogen log removal credits and monitoring requirements. Several Colorado cities are preparing pilot projects for 2025–2027. Arizona adopted rules permitting DPR in 2025. Cities including Tucson and Phoenix are well underway with planning and implementation. In Florida, legislation passed in 2021 mandates the phaseout of surface water discharges by 2032, prompting the development of DPR-enabling regulations. The Florida Department of Environmental Protection released draft rules in 2022, and pilot projects in Altamonte Springs, Tampa, and Palm Beach County are moving toward implementation, with statewide DPR guidelines expected by 2026.

The U.S. Environmental Protection Agency published National Water Reuse Action Plan progress updates in 2023 and 2024, emphasizing the role of DPR in climate resilience and drought adaptation.

Joining the challenge to implement

Canada, by contrast, does not currently permit DPR. Water reuse remains decentralized and largely focused on industrial or agricultural applications, with no national regulatory framework for potable reuse. However, provinces such as Alberta and British Columbia have expressed interest in developing reuse standards, and pilot-scale potable reuse research is underway at several academic institutions, including the University of Alberta and University of British Columbia.

While Canada remains in the exploratory phase, the U.S. has created the world's most advanced ecosystem for DPR adoption, combining regulation, funding, utility leadership, and public engagement to scale DPR across multiple water-stressed regions.

2,425 mld*

2025

California

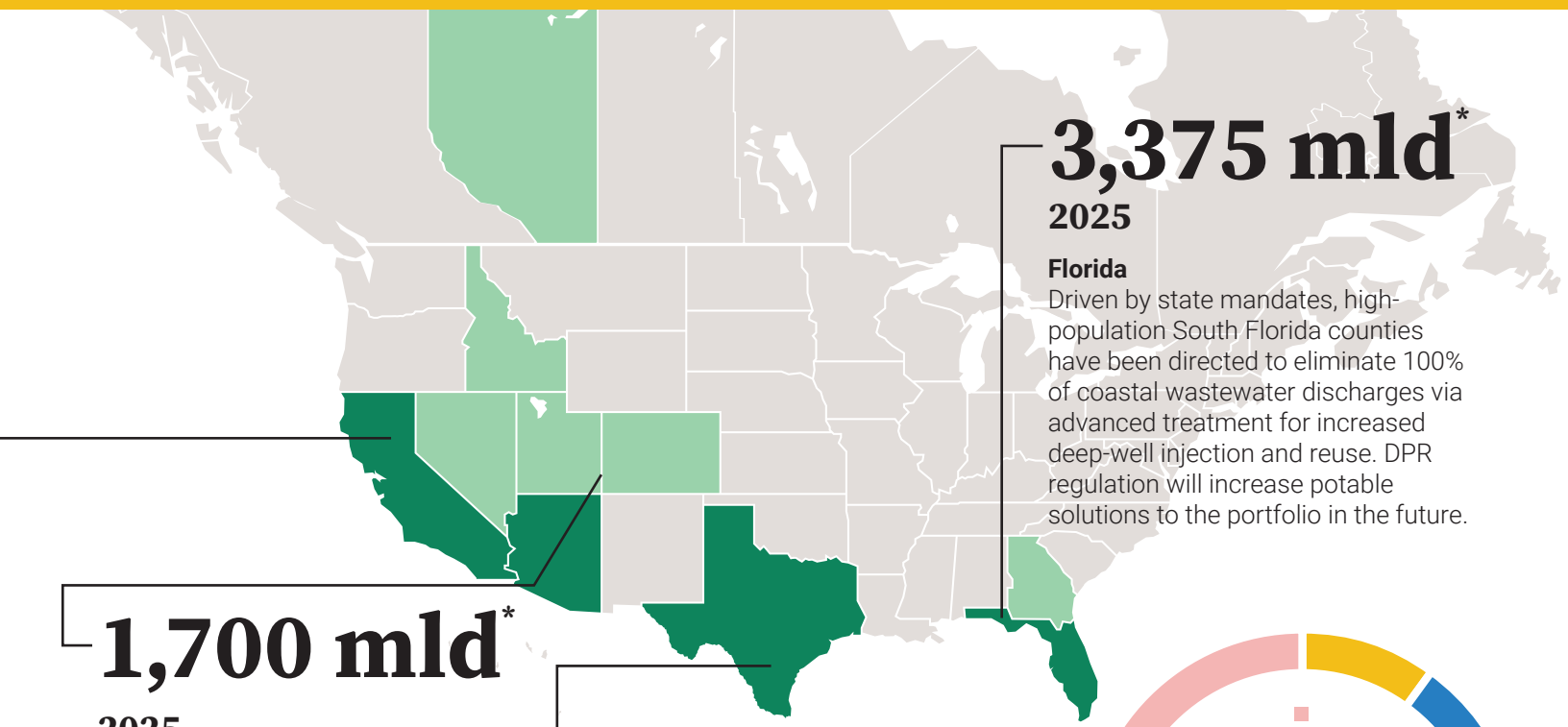
Driving toward state-mandated infrastructure by Governor in the 2022 California WaterStrategic Plan. Reuse is the current focus over large coastal desalination. The state has been leading implementation of new DPR regulations since 2023. Multiple major reuse programs are advancing throughout the state with increased use of DPR.

MWDSC/LACSD & City of Los Angeles, California
The parallel programs in Los Angeles (LA), Pure Water SoCal and Pure Water LA, will produce 1,450 mld of recycled wastewater from the two largest wastewater treatment plants on the U.S. West Coast when fully completed in ~2040. The finished water will include both IPR and DPR quality for local municipal supplies.

Orange County Water District, California
With commissioning of the third phase of the Groundwater Replenishment System in 2022, Orange County has the largest facility in operation in the U.S. at 492 mld for groundwater (GW) recharge into drinking water aquifers.

Pure Water Center, El Paso, Texas
As part of a broader initiative in Texas to create new water supplies, the 38-mld advanced water treatment (AWT) will provide much needed supplies to GW recharge, local irrigation and drinking water.

Palm Beach/Broward/ Dade Counties, Florida
Responding to state mandates to better manage over 1,000 mld of wastewater discharges, three South Florida counties have been implementing comprehensive treatment programs that include various quality levels of treated flows to both IPR and DPR standards.



3,375 mld*

2025

Florida
Driven by state mandates, high-population South Florida counties have been directed to eliminate 100% of coastal wastewater discharges via advanced treatment for increased deep-well injection and reuse. DPR regulation will increase potable solutions to the portfolio in the future.

1,700 mld*

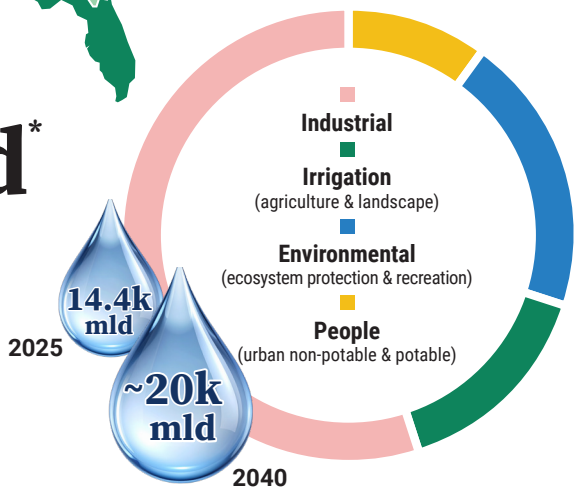
2025

Arizona, Nevada, Colorado
State mandates (final rule published in 2025) under Arizona Water Infrastructure Finance Authority to find ~3,400 mld of new water supply by 2040. 2024 DPR regulations will drive infrastructure development of DPR as part of this regional solution for new vectors of water supply to offset less reliable/available sources to drive development.

2,400 mld*

2025

Texas
Water is quickly becoming a restraining force to meeting commercial growth projections, industrial supplies, and population needs in the world's 8th largest economy.



Indicates current major focus on DPR-level treatment | *Million Liters Per Day (MLD=1,000 M3/Day = 0.2642 MGD) | Map and Data GWI/IDRA Handbook

Early Adoption Meets Regulatory Caution

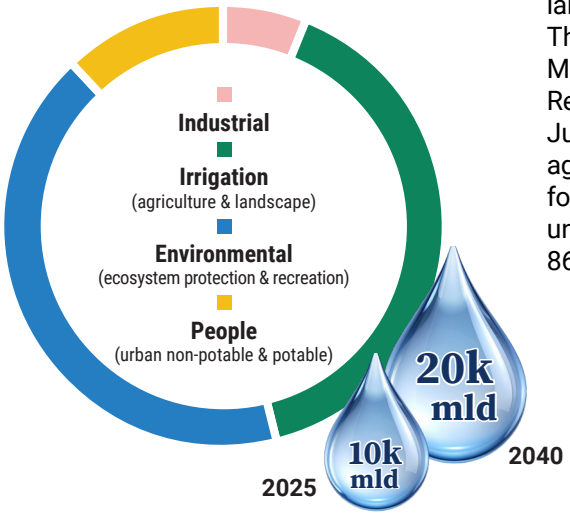
While Europe leads globally in wastewater treatment and non-potable reuse, the continent has been slower to adopt DPR due to regulatory conservatism, public perception barriers, and an abundance of conventional water resources in many regions. However, interest is increasing especially in southern Europe, as climate-driven water scarcity and EU policy incentives converge.

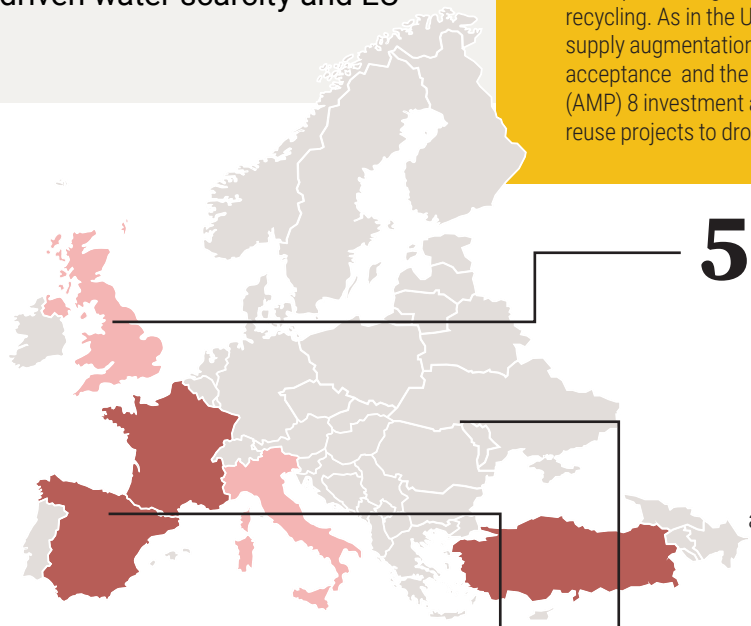
Utilities across the UK are embracing reuse

Nearly all UK utilities, as demonstrated by Southern Water (SW) in the water-stressed south part of England, are in full embrace of recycling. As in the U.S. decades ago, indirect supply augmentation is an initial step to DPR acceptance and the Asset Management Period (AMP) 8 investment at SW includes multiple reuse projects to drought-proof supplies.

UK AMP projection are ramping up the focus on reuse

The spending mandates set by the UK government for the next five years of AMP 8 capital investment have included recycling of wastewater to supplement water supplies in multiple utilities. Thames Water, Anglian Water, Southern Water Services, Wessex Water, and Yorkshire Water are becoming the vanguard in implementing both reuse and desalination to augment less predictable resources throughout the country. The combination of reuse, inter-basin transfers, and aggressive conservation are central to the 25-year Water Plan in the UK.





Continental Europe, Spain, and France continue to lead

The broader EU regulatory landscape has also evolved. The EU Regulation 2020/741 on Minimum Requirements for Water Reuse, which entered into force in June 2023, initially focuses on agricultural reuse but provides a foundation for potable applications under Articles 12 and 13. With over 86% wastewater treatment coverage across the EU, Europe is technically prepared, and increasingly politically motivated, to expand DPR as part of its climate resilience strategy.

55 mld*
2025

UK

Utilities in the UK are more aggressively beginning to explore advanced treatment as a response to less reliable supplies at high-risk regions.

140 mld*
2025

Other Europe

Several eastern and northern European countries like Sweden, Poland, and Turkey are expected to join the implementation to meet commercial and municipal customer needs.

1,750 mld*
2025

Western Europe

France, Italy, and Spain continue to lead the way in western Europe, but increased water stressors will drive capacity growth by over 20% in the next decade.

DPR in the Middle East and Africa

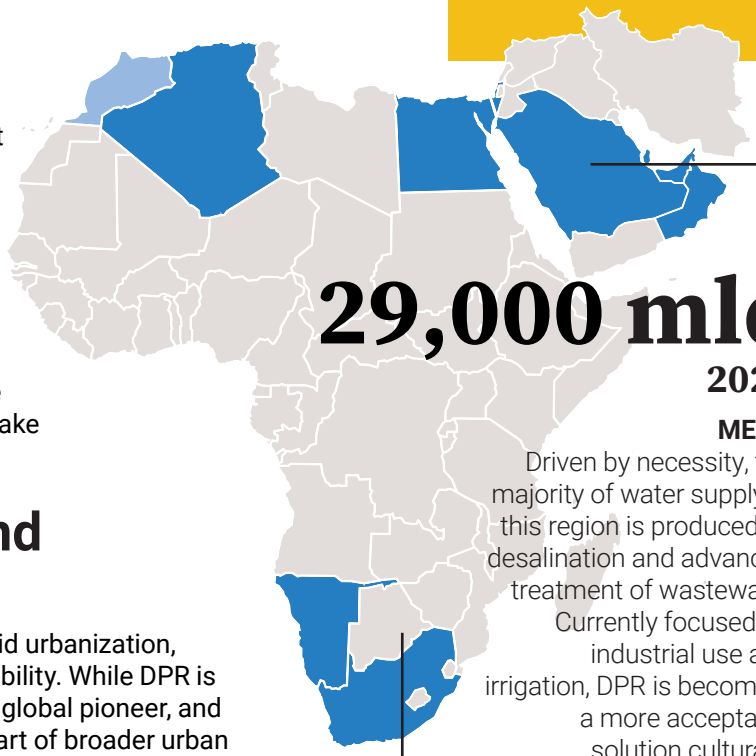
While DPR is still rare across the continent, Namibia remains the global pioneer, and other countries are increasingly exploring DPR as part of broader urban water resilience strategies. However, most African nations remain focused on non-potable reuse, aquifer recharge, and water supply expansion, with DPR limited to a handful of cities and planning initiatives.

Tel Aviv Shafdan Enhanced Treatment Facility

Israel provides advanced treatment as part of a 90% countrywide reuse strategy. The Shafdan facility near Tel Aviv provides more than 60% of irrigation supply to desert farming operations.

Emerging Intent, Limited Implementation

Middle East North Africa (MENA) is one of the most water-stressed regions globally and has some of the highest per capita investments in desalination and reuse infrastructure. While non-potable reuse is widespread and IPR is increasingly integrated into water systems, DPR remains in the research and development and planning stage in most countries. However, regulatory interest and technical preparedness are growing rapidly, positioning the region for DPR uptake this decade.



29,000 mld*

2025

MENA

Driven by necessity, the majority of water supply in this region is produced by desalination and advanced treatment of wastewater. Currently focused on industrial use and irrigation, DPR is becoming a more acceptable solution culturally.

Pioneering Leadership and Emerging Interest

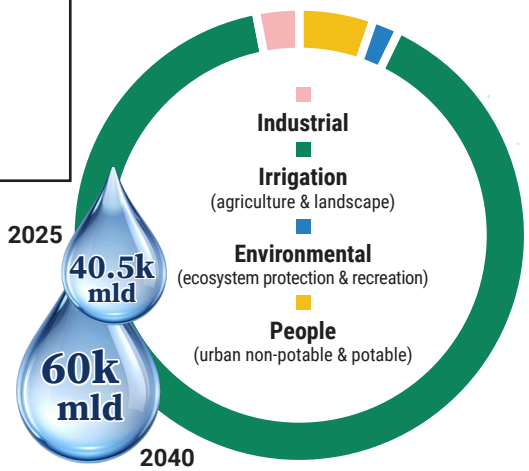
Africa's water sector faces growing stress from rapid urbanization, prolonged drought, and climate-driven supply instability. While DPR is still rare across the continent, Namibia remains the global pioneer, and other countries are increasingly exploring DPR as part of broader urban water resilience strategies. However, most African nations remain focused on non-potable reuse, aquifer recharge, and water supply expansion, with DPR limited to a handful of cities and planning initiatives.

200 mld*

2025

Sub-Saharan Africa

All the demographic projections point to Africa becoming a world leader in advanced treatment for urban drinking water supplies in the next 25 years. Egypt alone operates three of the largest reuse facilities with a collective capacity of nearly 15,000 mld. The commitment to DPR facilities in Namibia and South Africa is leading the way in the Sub-Saharan region.



Indicates current major focus on DPR-level treatment | *Million Liters Per Day (MLD=1,000 M3/Day = 0.2642 MGD) | Map and Data GWI/IDRA Handbook

Policy Momentum, No Active Systems Yet

South America is experiencing mounting urban water stress, especially in semi-arid and rapidly urbanizing regions. Countries like Chile and Brazil are actively exploring DPR as a future option, while others are strengthening non-potable reuse frameworks and conducting feasibility assessments. As of 2025, no country in South America operates a municipal DPR system, but several are progressing through early policy, technical, or pilot stages.

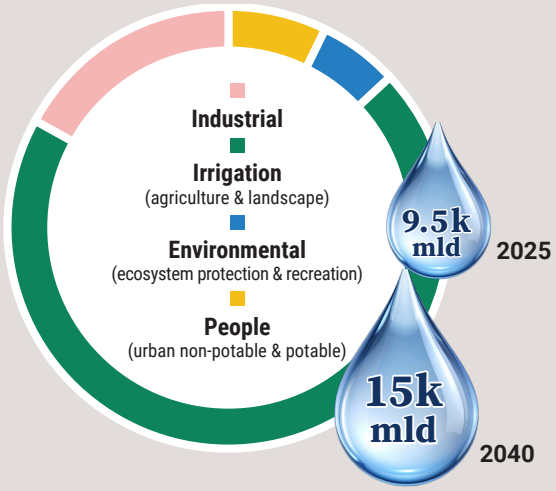
Cerro Verde Mine, Peru

South American mining offers some of the richest deposits in the world. Operations in Chile, Argentina, and the Cerro Verde facility in Peru depend on the Pacific Ocean for source water and aggressive reuse to efficiently maintain its supply.

Early Planning in Climate-stressed Small States

Central America and the Caribbean are experiencing increasing urban water insecurity due to seasonal droughts, limited treatment infrastructure, and climate volatility. While DPR is not yet operational in any country, several governments are exploring policy frameworks, pilot studies, and technical assistance programs to assess its viability. Regional interest is especially strong in Costa Rica, Panama, Barbados, and Jamaica, driven by multilateral support and long-term climate adaptation goals.

Mexico/Central America. The expansion of reuse facilities in Mexico has slowed during the past decade since the commissioning of the Atotonilco facility near CDMX. This facility alone represents close to 60% of the installed capacity in all of Mexico/Central America. The attractiveness of international trade between the U.S. and Mexico's six Border States will generate commercial interest for industrial facility supply that is prompting collateral exploration of larger capacities to serve irrigation and drinking water needs that can include DPR.



3,200 mld*
2025

Mexico
Mexico will continue to explore both Desal and reuse options for new water supplies. Currently, the regional installed based is led by the Atotonilco WRP in Mexico City that represents almost 25% of the operating capacity in the entire region. Smaller facilities focused in providing reliable water for mining and manufacturing will continue to be installed for regional business functions. The six Mexican Border States are likely to see more attention around reuse water exchanges with CA, AZ, NM and TX in the U.S. with DPR levels in future discussions.

2025

South America
As the press for critical minerals increases on South America, the need for water supply will become more dependent on recycling supply resources.

2025

Caribbean/Central America
Non-industrial commercial drivers will continue to create a steady growth for modest-sized desalination and reuse facilities in this area of LATAM.

Indicates current major focus on DPR-level treatment | *Million Liters Per Day (MLD=1,000 M3/Day = 0.2642 MGD) | Map and Data GWI/IDRA Handbook

Status and Strategic Importance

In 2025, Asia is now home to nearly 2.8 billion urban residents, driving unprecedented demand for safe, sustainable water sources in the face of rapid urbanization, industrialization, and environmental degradation. This will increase to a population over 4 billion in defined urban areas in the next 20 years in Asia alone. Across the region, DPR is emerging as a potential solution, though uptake remains uneven due to varying regulatory readiness, cultural attitudes, and infrastructure gaps.

Kodungaiyur and Koyambedu AWTs

India and China will continue to be leaders in the scale of water recycling and reuse for industrial, commercial and municipal consumption. In 2020, China committed to tertiary treatment of 44,000 mld of wastewater flows to provide supply offsets to industrial and municipal users.

Reuse for Direct Commercial and Industrial Supplies Is Growing

While Asia has not yet embraced DPR at scale, the region is home to some of the most technically advanced, water-stressed, and urbanized environments globally, creating strong drivers for future growth. Tailored strategies that address public acceptance, regulatory clarity, and long-term infrastructure planning will be key to unlocking DPR's potential across diverse Asian contexts.

The simple scale of demand and ability to implement in China and India dominate all of Asia's capacity but countries like Philippines and others in central/southeast Asia begin to add meaningful applications of reuse facilities up to DPR quality levels. In the past 10 years, China alone more than doubled its installed reuse capacity and that is expected to continue with very aggressive central government mandates to have 25% of all wastewater recycled and between 40–70% in most urban areas by 2035. Taiwan is also on aggressive capacity acceleration mandates to meet industrial demands.

Indonesia/Singapore

The vast expanse of the Indonesia region will continue to manage the demands of explosive growth in urban areas and thirsty industrial, mining, and agricultural operations. With all this, even basic indirect reuse applications and in their infancy but beginning to gain cultural acceptance. Potable reuse at any scale for any direct use is likely a decade away. Singapore has led the way in implementing holistic reuse with its iconic programs at Changi and Tuas.

~80,000 mld*

2025

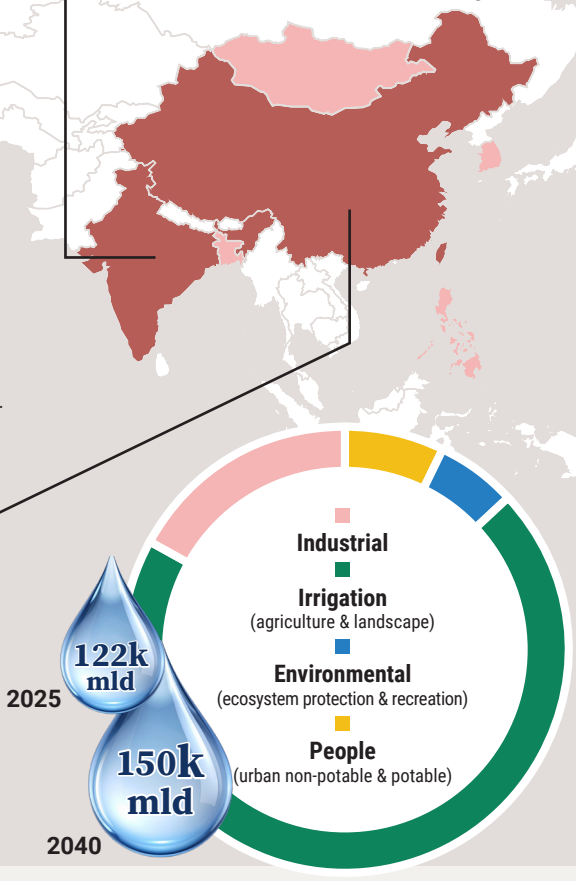
China

With the world's second largest economy and population, China has arguably one the largest installed base of water recycling capacity but needs this resource to fuel continued growth in its industrial based and highly urbanized population.

2025

India

Due to massive urban growth and an expanding industrial base, India has both the greatest need to improve treatment of wastewater and an explosive demand for clean drinking water.



Leading Trials, Strong Foundations, Limited Adoption

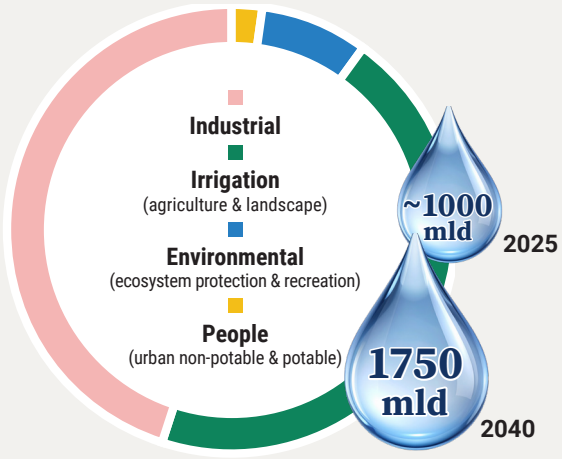
Oceania is highly water-aware, with world-class treatment infrastructure and high public engagement on climate and sustainability. Australia leads the region in DPR research and pilot-scale implementation, while New Zealand and island nations focus more on decentralized resilience and non-potable reuse. As of 2025, no country in Oceania has a fully operational municipal DPR system, but technical and regulatory capacity is strong.

Gibson Island AWT in Brisbane

For the past 20 years Northeast Australia has driven implementation of new water solutions from countrywide mandates for wastewater reuse. Gibson Island is one of three large constructed facilities in Queensland near Brisbane with the 100-mld AWT the largest in the Southern Hemisphere at the time of commissioning. in the Southern Hemisphere at the time of commissioning.

30 years of leadership out of necessity

This region has been a leader over the past 30 years in integrating reuse for water supplies out of necessity. Overall, Australia is the regional reference point for DPR research and regulatory preparedness, but no country in Oceania has moved to full-scale DPR adoption. The combination of strong governance, advanced monitoring systems, and progressive water literacy provides a solid foundation should water scarcity necessitate DPR in the coming years.

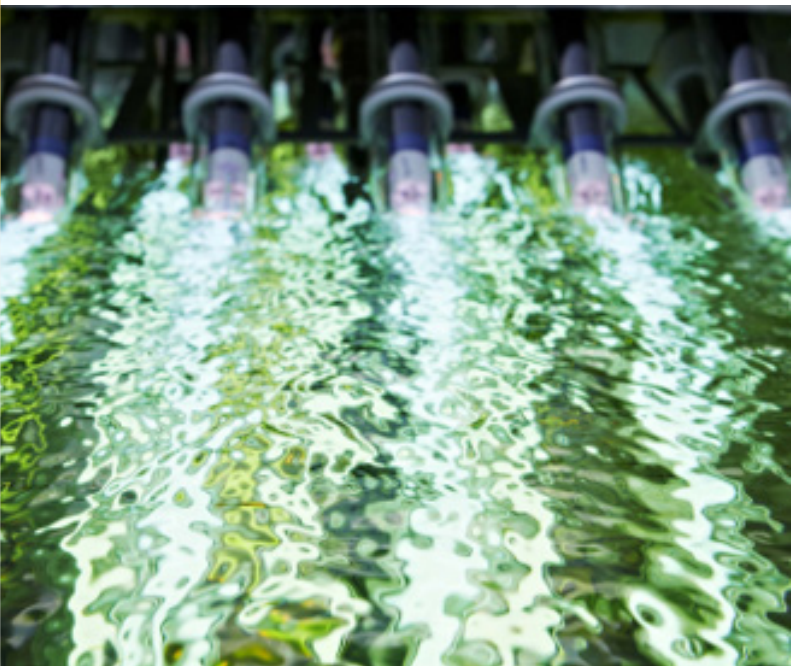


2025

Australia

The risk to growth in extremely water short, drought prone regions was realized during the Millennial Drought 1997-2009. As part of a forward-looking countrywide masterplan Australia aims to add ~1000 mld to the installed desalination capacity and ~250 mld of recycling capacity in the next.

Indicates current major focus on DPR-level treatment | *Million Liters Per Day (MLD=1,000 M3/Day = 0.2642 MGD) | Map and Data GWI/IDRA Handbook



Conclusion and Strategic Outlook

DPR has reached a pivotal moment. Once a niche technology, it now stands at the center of global water security innovation and climate resilience. Around the world, communities from Singapore to San Diego have proven that DPR is safe, reliable, and scalable. The question is no longer whether DPR works, but how rapidly and equitably it can be adopted.

As climate pressures intensify, the logic is undeniable. DPR transforms wastewater into a sustainable supply, reduces dependence on rainfall, and creates a closed-loop system that aligns with the circular economy. It delivers on multiple fronts: securing water for communities, reducing the energy intensity of supply, and advancing global goals on climate adaptation and sustainable resource management.

But DPR technology alone is not enough. Progress depends on trust, governance, and financing. Regulators must implement science-based frameworks that safeguard public health while providing clarity for utilities and investors. Governments and multilateral institutions must ensure that finance reaches emerging economies and vulnerable regions. Above all, utilities must engage with communities, building confidence through transparency, participation, and education.

The path to 2050 is clear. We can turn today's pilots into tomorrow's global norm by mainstreaming DPR into national water strategies, scaling investment, and sharing knowledge across borders, coupled with excellence in public awareness campaigns. IDRA and its partners are committed to leading this transformation. The future of water security is not only about building more supply, it is about designing resilient, low-carbon, and just systems. DPR embodies that future.

Direct Potable Reuse is the Future!

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