

# Oil and Gas

## Improved Environment and Conservation – Water



### CONTEXT

Global water demand is predicted to increase significantly over the coming decades. Freshwater withdrawals have already been annually increasing by about 1% over the past three decades. Agriculture accounts for roughly 70% of total freshwater withdrawals worldwide and for over 90% in the least developed countries. Energy production and large industry account for about 15% and 5%, respectively. The remaining 10% is used for domestic purposes, including drinking water, sanitation and hygiene. The quantity of water that people actually drink – around 2 liters per day – represents only a minute fraction (<1%) of the total amount of water that we use.



Accelerated urbanization and the expansion of municipal water supply and sanitation systems, mostly in developing countries, will contribute to increasing demand by some 30% by 2050. The global population is expected to reach 9 billion, of which 70% will be living in urban areas.

### WHAT WE ARE LOOKING FOR

We seek safe, effective, affordable, and sustainable technologies and businesses that address water scarcity and water disposal challenges and unlock value from waste water. Safe water reuse is more economically feasible and attractive when there is a potential for cost recovery by treating wastewater to a quality standard acceptable to a particular user. Not all wastewater needs to be treated to the level of drinking water quality. Non-potable quality water can be safely used in agriculture, industries and municipalities for a variety of different purposes – irrigation, cleaning, cooling, etc. Fit-for-purpose wastewater treatment to the level most appropriate for the intended ‘safe’ use is essential for maintaining the system’s affordability.

The proposals must be capable of addressing specific oil and gas industry issues and should include a clear description of the business case. The basic science must be well understood, but the concept would still need to be proven through modeling or testing in a simulated operational environment.

Typically, technologies with a TRL 2-5 (as per [API 17N](#)) are the best candidates for this call. Please provide a clear description on how you will reach your “Proof of Concept”.

### IN SCOPE

- Prevention and minimization of wastewater and contaminated flows streams.
- Cost-competitive decentralized water treatment systems.
- Wastewater can also be a cost-effective and sustainable source of energy, nutrients and other recoverable by-products, with direct benefits to food and energy security.

## **OUT OF SCOPE**

- Traditional centralized waste water disposal through e.g. disposal wells.
- Monitoring and reporting of pollutant discharges and ambient water quality.

## **WE APPLY THE FOLLOWING CRITERIA FOR CONSIDERATION:**

1. Novel – Is the idea fundamentally different and unproven?
2. Valuable – Could the idea create substantial new value if it works?
3. Doable – Is there a plan to prove the concept quickly and affordably?
4. Relevant (Why Shell?) – Is the idea relevant to the future of energy?

Any information submitted as part of the process must contain only NON CONFIDENTIAL data and information at this stage.

The funding opportunity will be in the range USD 150,000 – 300,000 to progress a “proof of concept” in a phased approach over a period of no more than 12 months. Further development may be supported and or facilitated by Shell depending on the overall outcome of the initial award.

For questions contact [GameChanger-Challenge@shell.com](mailto:GameChanger-Challenge@shell.com)