Student Design Competition: Circular Water Economy Memo

This memo provides background on WEF'S definition of Circular Water Economy and explains the rationale for adding a third category to the WEF Student Design Competition (SDC). It outlines guidance for Member Associations (MAs) and students on how projects may align with this category.

Circular Water Economy Overview

WEF defines a Circular Water Economy as an approach to water management that prioritizes waste reduction, resource recovery, and the regeneration of natural systems throughout the water cycle. The CWE treats water as a renewable resource rather than a disposable one. This framework emphasizes the use of advanced and innovative technologies to reduce pollution, recover energy and nutrient, and close resource loops across industrial, agricultural, and municipal water systems.

Unlike traditional water practices, the CWE model seeks to maximize the long-term value of water by continually reusing it, extracting beneficial byproducts, and restoring natural ecosystems. As a result, CWE supports sustainability goals related to climate resilience, environmental protection, and efficient infrastructure.

- Read WEF's Position Statement on Circular Water Economy here.
- Frequently Asked questions on Circular Water Economy can be found here.

Third Student Design Competition Category

The Circular Water Economy Design Competition has been added to the WEF SDC to better reflect WEF's evolving strategic priorities. There is a growing emphasis on process recycling and resource recovery within water environments and throughout the wastewater and recycled water treatment cycle. This addition of this category enables WEF to more effectively recognize projects that align with these forward-looking principles.

Guidance for Member Associations and Student Teams

WEF recognizes that, at the MA level, there may be budgetary or logistical constraints that limit the ability to host an additional competition category or sponsor an extra team to WEFTEC. As a result, WEF encourages MAs to continue sorting student teams into either Water Environment Design Competition or the Wastewater Design Competition.

However, students are strongly encouraged to clearly state whether they believe their project aligns with the principles of Circular Water Economy. A project may be considered representative of this category if it incorporates one of the following elements:

- Minimization or water use and waste, through efficient processes, reuse, or demand reduction strategies
- Recovery of valuable resources such as energy, nutrients, or other byproducts
- Restoration or protection of natural systems including ecosystem rehabilitation, aquifer recharge, or nature-based solutions.

By identifying projects that embody these principles. WEF aims to foster innovation, encourage holistic thinking and highlight the role of upcoming water professionals in building a more sustainable and resilient future.

Past Circular Water Economy Projects

- University of South Florida- From Waste to Worth: Biosolids Optimization at the Howard F Curren Advanced Wastewater Treatment Plant
- University of Waterloo- Next-Gen WWTF: Turning Barrie's Waste into Energy and Nutrients
- University of California Riverside- VOC Remediation at a Former Aerospace Manufacturing Site
- Purdue University – Lebanon WWTP Peak Energy Demand Analysis