

Hackathon Guidelines

Hackathon Themes and UN Water Pillar Alignment

The hackathon will be structured around six flagship themes that reflect priority water challenges at national, regional, and global levels. Each theme is explicitly aligned with one or more UN Water pillars, ensuring that all outputs are directly relevant to UN policy discussions and Sustainable Development Goal 6.

The themes are intentionally framed to be:

- Technically substantive and research-driven
- Understandable and compelling for UN and policy audiences
- Suitable for exhibition, discussion, and recognition at the UN Water Conference

Theme 1: Water Security and Sustainable Desalination

UN Water Pillars: Water for People; Water for Prosperity; Investments for Water

This theme addresses the foundational challenge of ensuring reliable and affordable water supplies in water-scarce regions. Given the central role of desalination in the UAE and many arid countries, projects under this theme will focus on improving the sustainability, efficiency, and resilience of water supply systems.

Indicative focus areas include:

- Low-energy and hybrid desalination concepts
- System-level optimization to reduce energy use and emissions
- Brine management and resource recovery strategies
- Comparative cost, energy, and environmental performance assessments

Theme 2: Water Reuse, Circularity, and Resource Efficiency

UN Water Pillars: Water for Prosperity; Water for Planet; Investments for Water

This theme supports the transition from linear water use to circular, resource-efficient systems. It emphasizes water reuse as a strategic response to scarcity, environmental protection, and industrial sustainability.

Indicative focus areas include:

- Municipal and industrial wastewater reuse configurations
- Zero-liquid-discharge and circular water systems
- Integrated water–energy–materials efficiency analyses

Theme 3: Smart, Digital, and AI-Enabled Water Systems

UN Water Pillars: Water for Prosperity; Water for Planet; Water for Cooperation

This theme focuses on the role of digital technologies in improving transparency, efficiency, and resilience across water systems. Projects will explore how data, sensing, and AI can support better operational and strategic decision-making.

Indicative focus areas include:

- AI-driven leak detection and demand forecasting
- Smart sensing and real-time system monitoring
- Digital twins and decision-support tools for utilities and regulators

Theme 4: Water Quality, Health, and Environmental Protection

UN Water Pillars: Water for People; Water for Planet; Water in Multilateral Processes

This theme addresses water quality risks and their direct implications for public health, ecosystems, and regulatory frameworks. Projects will emphasize detection, assessment, and management of contaminants and pathogens.

Indicative focus areas include:

- Pathogen and contaminant detection methodologies
- Risk assessment frameworks for potable and non-potable reuse
- Monitoring of emerging contaminants and environmental impacts

Theme 5: Energy–Water Nexus and Climate Resilience

UN Water Pillars: Water for Planet; Water for Prosperity; Investments for Water

This theme explores integrated solutions at the intersection of water, energy, and climate. Projects will focus on reducing emissions, improving resilience, and planning for long-term climate impacts on water systems.

Indicative focus areas include:

- Renewable-powered water treatment and supply systems
- Energy recovery and thermal integration strategies
- Climate-resilient infrastructure planning and scenario analysis

Theme 6: Integrated Water Systems, Governance, and Cooperation

UN Water Pillars: Water for Cooperation; Water in Multilateral Processes

This theme focuses on system-level planning, governance, and cooperation mechanisms required to manage increasingly complex and interconnected water challenges.

Indicative focus areas include:

- Integrated water resources management tools
- Transboundary and multi-stakeholder decision frameworks
- Data-driven governance and policy-support systems

Participation Model and Team Structure

The participation model is designed to balance global inclusivity with academic rigor and effective mentorship.

Eligible Participants

Participation is open to undergraduate and graduate students enrolled in recognized higher education institutions during the 2026 academic year. Eligible disciplines include, but are not limited to, engineering, science, data science, public policy, health, and environmental studies.

Team Composition

Each team will consist of:

- 4-5 students, with an interdisciplinary mix encouraged
- 1-2 faculty advisor from the host institution
- 1-2 dedicated industry mentor

Faculty advisors ensure scientific rigor, ethical compliance, and alignment with institutional research standards, while industry mentors provide practical insights and adoption perspectives.

Evaluation, Judging, and Quality Assurance

Judging Structure

Evaluation will be conducted through a multi-tiered process to ensure fairness, rigor, and relevance:

- Technical review panels comprising academic experts and technical specialists
- UN and policy relevance panel focusing on alignment with UN Water pillars
- Grand jury responsible for final awards and recognition

Evaluation Criteria

Projects will be evaluated using the following criteria:

- Scientific and technical rigor (30%)
- Alignment with UN Water pillars (20%)
- Feasibility and scalability (20%)
- Industry relevance and adoption potential (15%)
- Quality of communication and presentation (15%)

Awards and Prize Structure

Award Categories

Awards are structured to recognize excellence across scientific quality, societal impact, and practical relevance, while avoiding overlap or duplication.

Core Awards

- Grand Prize – Khalifa University–UN Water Innovation Award
- Best Theme Awards (one award per hackathon theme)

Strategic Recognition Awards

- UAE Water Impact Award: Outstanding relevance to UAE national water priorities
- Climate & Planet Impact Award: Exceptional contribution to environmental sustainability and resilience
- Industry Choice Award: Highest adoption potential as selected by industry partners

Prize Money

- Grand Prize: **50,000 AED**
- Best Theme Awards (Total: 6 Awards): **30,000 AED** each
- Strategic Awards (Total: 3 Awards): **20,000 AED** each

Total indicative prize pool: approximately **290,000 AED**.