

## The Dam Competition Program

### Applicant Guidelines

#### 1. Program Overview

##### 1.1 Introduction

**The Dam Competition Program** is a national, implementation-focused innovation initiative aimed at addressing sedimentation challenges affecting dams across the Kingdom of Saudi Arabia.

Sediment accumulation reduces dam storage capacity, increases operational and maintenance costs, and impacts long-term water security. Given the Kingdom's climatic and geological conditions, sedimentation poses a growing operational risk that requires practical, scalable, and deployable solutions.

The program is designed to move beyond research and conceptual studies by **piloting real solutions in operational dam environments**. Selected applicants will implement and test their solutions through paid pilot engagements, with the objective of validating performance, feasibility, and impact.

##### 1.2 Program Objectives

The program aims to:

- Identify implementable solutions addressing dam sedimentation challenges
- Pilot and validate solutions in real operational environments
- Improve dam efficiency, resilience, and lifecycle performance
- Reduce long-term operational and sediment-related risks
- Enable scalable solutions aligned with national water priorities

##### 1.3 Scope of Solutions

The program welcomes solutions addressing sedimentation across the full lifecycle, including but not limited to:

- Monitoring, prediction, and decision-support solutions
- Sediment control and mitigation approaches (including upstream and catchment-level interventions)
- Sediment treatment, transformation, and reuse solutions

Solutions may target existing sediment accumulation, future sediment inflow, or both.

#### **1.4 Challenge Focus Areas (Tracks)**

While the Dam Competition Program follows a **single application and evaluation process**, submitted solutions are expected to align with **one of the following three challenge focus areas (“Tracks”)**.

Applicants are not required to submit separate applications per track; however, each proposal must clearly indicate which track it primarily addresses.

##### **Track 1: Smart Monitoring, Prototyping, and Prediction**

This track focuses on **digital, data-driven, and intelligent solutions** that enhance visibility, prediction, and operational decision-making related to dam sedimentation.

Typical solution areas include (but are not limited to):

- Real-time or near-real-time sediment monitoring systems
- IoT-based sensing and data acquisition
- AI/ML-based prediction of sediment inflow, accumulation, or high-risk events
- Early warning systems and decision-support tools for dam operation and maintenance

##### **Expected Technology Readiness Level (TRL):**

**TRL 6–9** (validated prototype to operational deployment)

Solutions under this track should demonstrate a high level of technical maturity and readiness for deployment in operational dam environments.

##### **Track 2: Sediment Control and Mitigation**

This track focuses on **physical, engineering, and nature-based solutions** aimed at reducing sediment generation, transport, or accumulation.

Typical solution areas include:

- Catchment- or watershed-level sediment reduction interventions
- Engineering solutions to control sediment movement
- Hybrid or nature-based solutions that improve system resilience
- Climate-adaptive approaches addressing extreme rainfall or runoff events

Interventions may occur:

- At the dam structure
- Upstream within the catchment area

**Expected Technology Readiness Level (TRL):**

**TRL 6–9** (field-tested or operationally deployable solutions)

Solutions are expected to be technically proven and suitable for pilot implementation at real dam sites.

**Track 3: Sediment Transformation and Reuse**

This track focuses on **turning sediment from a liability into a resource** through safe, compliant, and economically viable reuse pathways.

Typical solution areas include:

- Reuse of dredged or removed sediment in construction or materials
- Alternative cement or aggregate applications
- Mining, environmental, or land restoration uses
- Circular economy and value-chain creation models

**Expected Technology Readiness Level (TRL):**

**TRL 4–9** (validated concept to operational deployment)

This track allows for **slightly earlier-stage solutions**, provided there is a clear and credible pathway to pilot implementation within the program timeframe.

**2. Eligibility Criteria**

**2.1 Eligible Applicants**

The direct beneficiary of the program must be a **legally registered startup or small and medium enterprise (SME)**. Eligible entities include:

- Startups and SMEs operating in related fields
- Established technology companies and solution providers
- Engineering and environmental consultancies classified as small or medium enterprises

**Individual applicants are not eligible.**

Consortium Applications:

Research entities such as universities and research centers may participate through a consortium arrangement, provided that:

- The Lead Applicant is a qualified startup or SME that meets the eligibility criteria above
- The lead applicant assumes full contractual and financial responsibility for the application
- The research entity participates as a supporting partner within the consortium and may not apply independently

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## 2.2 Technical Readiness

Applicants must demonstrate sufficient technical maturity to support pilot implementation. Expected TRL ranges vary by solution type:

- **Track 1 (Monitoring & Prediction):** TRL 6–9
- **Track 2 (Control & Mitigation):** TRL 6–9
- **Track 3 (Transformation & Reuse):** TRL 4–9

Applicants must clearly justify the stated TRL and provide supporting evidence such as pilots, deployments, prototypes, or validation results.

## 2.3 Geographic and Operational Requirements

- Applicants may be local or international entities
- Selected applicants must be willing and able to operate in Saudi Arabia during the pilot phase

- Local presence or partnerships is required prior to contracting

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## 2.4 Compliance

Applicants must confirm:

- Compliance with applicable environmental, safety, and regulatory requirements
- Ability to operate in controlled dam environments under operator supervision
- Willingness to comply with reporting, monitoring, and evaluation requirements

## 3. Application Process

### 3.1 Overview

The Dam Competition Program follows a **single-stage application process**:

1. Submission of a **Full Proposal**
2. Evaluation and shortlisting
3. Interviews with shortlisted applicants
4. Nomination of selected SMEs for pilot implementation

There is **no pre-proposal or concept note stage**.

### 3.2 Full Proposal Submission

Applicants must submit a complete proposal through the official application platform announced at launch.

The proposal must include:

- Applicant and organizational information

- Description of the sedimentation problem addressed
- Detailed solution description and technical approach
- Implementation plan for real dam deployment
- Risk assessment and mitigation strategy
- Expected impact and measurable outcomes
- Budget and milestone-based funding plan
- Relevant team experience and prior deployments

Incomplete or non-compliant submissions may be excluded from evaluation.

#### **4. Evaluation Process**

All eligible applications will be evaluated through a structured and transparent process.

##### **4.1 Full Proposal Evaluation Criteria**

Each proposal is evaluated out of **100 points** based on the following criteria:

Evaluation Criterion	Description	Weight
Problem Relevance	Clarity and relevance of the problem addressed	15%
Technical Merit	Soundness and appropriateness of the technical solution	20%
Implementation Feasibility	Practicality of deployment on real dam sites	20%
Expected Impact	Anticipated operational, environmental, or cost impact	15%
Scalability	Potential to replicate across multiple dams	10%
Team Capability	Relevant experience and execution capacity	10%
Budget & Value for Money	Cost-effectiveness and alignment with milestones	10%

**Total: 100%**

**Commented [AA3]:** Alignment with the original track and/or challenge (The problem is clearly stated and/or the solution is clear and relevant)

**Commented [AF4]:** 30%

**Commented [AF5]:** 5%

**Commented [AF6]:** 5%

#### 4.2 Proposal Scoring Scale

**Commented [AA7]:** May keep and/or remove

Score Range	Interpretation
90–100	Excellent – Highly implementation-ready and impactful
75–89	Very Good – Strong proposal with manageable risks
60–74	Adequate – Requires clarification or refinement
Below 60	Insufficient – Does not meet program requirements

#### 4.3 Interviews and Final Selection

Top-scoring applicants will be invited to **interviews or clarification sessions** to:

- Validate implementation readiness
- Clarify technical and operational assumptions

- Assess risk awareness and mitigation plans

Final selection will consider:

- Full proposal evaluation results
- Interview outcomes
- Overall feasibility of pilot implementation

A **limited number of SMEs** will be nominated for pilot implementation, subject to budget and operational considerations.

## 5. Funding and Contracting

- Selected applicants will be engaged through **paid pilot contracts**
- Funding is **milestone-based**, linked to verified deliverables
- An initial mobilization payment may be provided upon contract execution

Detailed contractual terms will be shared with shortlisted applicants.

## 6. Intellectual Property and Data

- Intellectual property remains with the solution provider
- Implementing entities retain non-exclusive rights to use pilot results for governmental purposes
- Data generated during pilots must be handled in accordance with applicable data governance and confidentiality requirements

## 7. Important Notes

- Submission of an application does not guarantee selection or funding
- The program reserves the right to modify timelines or scope if required
- Evaluation outcomes are final and not subject to appeal

## **8. Announcements and Updates**

All official announcements, timelines, and application instructions will be published through the program's official channels and application platform.

### **Financial Constraints:**