INNOVATION CENTRE DENMARK

NITI Aayog | ATAL INNOVATION MISSION

AIM-ICDK WATER INNOVATION CHALLENGE 2.0

(Atal Innovation Mission - Innovation Center Denmark water innovation challenge)

Background

Atal Innovation Mission, NITI Aayog (AIM-NITI Aayog) has partnered with Innovation Center Denmark (ICDK) to engage academic institutions, industry partners, entrepreneurship cells, incubators in India to organise and prepare Indian participation for Next Generation Water Action - an initiative that will engage young talents from leading universities and innovation hub of selected countries in Africa, Latin America and Asia to build their skills and apply their technical disciplines, innovation capacity and solutions to challenge and catalyse water solutions towards smart liveable cities.

The AIM-ICDK water challenge 2.0 is aimed at identifying the Indian delegations for the Next Generation Water Action challenge, and would consist of: Student team (max 3 members per team), Student Entrepreneur Team and Young Indian entrepreneur teams, working on technology-based solutions in the water domain. Next Generation Water Action aims to engage young talents from around the world to bring forward the youth perspective, current research and innovation on pressing water challenges. The initiative will provide unique opportunities for talented and driven young university students, researchers and inspiring entrepreneurs to accelerate water solutions. The program and activities are facilitated by DTU Skylab, Innovation Center Denmark and partners, and the Indian challenge is anchored by Atal Innovation Mission, NITI Aayog.

The challenge seeks to identify innovators under two tracks:

1. Young Academics track - Student team of (max 3 members per team), Student entrepreneur team (max 3 members per team).
2. Young Entrepreneur track - Entrepreneur teams of at-most Three members per team

Who can apply for the challenge? (Eligibility)

1. **Common conditions**
   - **A.** No applicant or team member should be older that 35 years as on 1st January, 2022
   - **B.** Applicant must be an Indian citizen

2. **Specific category conditions (All the below conditions are mandatory)**

   A. Young academics:

   I. Student team (Student A)

   - The student members must be enrolled in a Bachelor/Masters/Doctoral level course from a recognised college/university. (1st year bachelor students are not eligible)
   - The applicant should provide details of a faculty guide from the Institution the applicant is currently enrolled in.

II. Student Entrepreneurs (Student B)

- All members must be enrolled in a Bachelor/Masters/Doctoral level course from a recognised college/university. (1st year bachelor students are not eligible)
- The applicant should be willing to register a Company/Startup before the start of the program (declaration for the same is part of the application form). If the company/startup is already registered, the same may be provided in the application form.
- The applicant should provide details of a faculty guide from the Institution the applicant is currently enrolled in.

B. Young Entrepreneurs

- Application should be submitted as a team, and the applicant should have a registered company. The applicant should provide any one of the below registration details:
  - Registration under Companies act
  - MSME registration
  - Registration under Limited liabilities act
  - Startup registration from DPIIT
- All team members should be under the age of 35.
- The applicant must have at least a lab validated prototype at the time of application.

Challenge focus areas

S.No.	Broad Areas	Description	Illustrative list of potential solutions – Applications may not be limited to this list
1	**Water Source mapping, monitoring and sustainability (for quality and quantity)**	As India proceeds to achieve 100% coverage of Functional Household Tap Connection within next 2 to 3 years, a parallel step is ensuring sufficient quantity and required quality of water for drinking, agriculture and other uses. It becomes extremely important to have up to date **information on the water source** and pursue its regular monitoring for its quality, quantity and sustainability. In this context, solutions are sought for: i. **Mapping:** Solutions for assessing the water source and water quality and Geographic Information Systems, or other tools for creating a map that will tell you at a glance - ground demographics, hydrogeological and water-related statistics for that source **ii. Monitoring:** Tools for monitoring the quality and quantity of water and real time linkage of the results with data systems iii. **Sustainability**: Preservation of water bodies through localized management and monitoring techniques - people based and digital	i. Quick and low-cost methods for groundwater mapping ii. Quick and low cost easy to use tools for water level and/or water quality monitoring and real time linkage of the results with data systems iii. Tools for creating and easy viewing of water management iv. Quick and low-cost test kit for water quality testing and real time linkage of the results with data systems v. Management of using social governance mechanisms wherein local communities are engaged in the management and protection of water bodies and ensuring equitable use
2	**Safe and sustainable water**	The need for sustainable and total cost recovery financial model for robust & un-interrupted supply of	i. Solutions for detection of water leakage detection and or

	distribution and reduction of Non-Revenue water	drinking water is widely accepted and is undisputable. To achieve this both the non-revenue water (due to leakage, theft, non-metering, erroneous metering, non-revenue water etc.) has to be reduced and a sustainable tariff structure has to be developed. **Solutions are invited for prevention of avoidable water loss** with an aim to bring down the disparity in access to drinking water and foster the inclusiveness in both rural and urban areas.	prevention in infrastructure ii. Solutions to enhance social acceptance of water metering and water tariff collection iii. **Integrated water management system for energy and resource efficiency** of water supply combining automated leak/theft detection, inspection, repairs, smart water metering, quality alert and monitoring of usage trends. iv. Efficient **water logistics systems** for inclusive and sustainable distribution in urban areas v. Assessment of pipes quality (HDPE, uPVC, cast iron, Ductile iron, etc) with sensor-based guns for quick field assessment. vi. Reduction of energy consumption by pumps by observing its real time data on efficiency, flow, power consumption and alert if the power consumption exceeds an optimum level vii. Ensuring functionality of tap connection in sub-zero temperatures
3	**Treatment technologies for making water fit for different uses**	As the population increases, the thrust on water resources rises exponentially in terms of direct use and to support developmental needs. It becomes imperative to reduce the dependence on freshwater for all requirements. In this context, **solutions are invited for treatment, recycling and reuse of water for non-potable requirements**	i. Reduction in cost and effort of treatment of waste water/grey water/reject water through technological innovations in agricultural, domestic and industrial sectors ii. Solutions for drinking water treatment, disinfection and sustainable management of reject water iii. Compact desalination units which are energy saving, cost-effective, easily maintainable and could be powered through solar/wind/wave energy. iv. Climate resilient water and sanitation technologies for different edaphoclimatic regions of India v. Retrofitting of existing iron removal plants for automatic backwash at fixed timing and measure & display input and output iron content limits vi. Handling sludge e.g. in Assam

			districts and in Arsenic & Iron removal plants in West Bengal.
4	**Prediction, Forecasting and Management**	"Expecting the unexpected" is the mantra for better management and water management is no exception to that. Most of the (if not all) irrigation and drinking water supply projects are being operated upon static schedules. This leads to inefficiencies in many ways such as over supply of water to farm fields and sometimes delay in supply of water. Lack of accurate information on projected population and expected demands leads to higher gestation period of drinking water projects. **Solutions are invited for predicting and forecasting future water demand in agricultural, industrial and domestic purposes**	i. Estimating crop water/irrigation requirement by real time monitoring of soil moisture and weather forecast ii. Assessment of Irrigation requirement in near real time (say 2/5/7 day requirement) from image analysis of vegetation/soil by use of AI/ML. iii. Water usage and demand prediction for use by urban/rural managers for planning and operations.
5	**Awareness / Capacity Building**	Awareness, technical know-how and the strength of community management is a proven methodology in successful management of water. For e.g. most of the products, foods and beverages that we come across daily consumes significant quantity of water during their production cycle, which is commonly referred as 'virtual water'. A deeper understanding of such simple facts can better instigate more responsible use of the precious resource. **Solutions are invited for awareness and capacity building of the community in this direction and encourage behaviour change in the larger interest of society.**	i. Tools for mapping of skills/HR in the villages to support operation and management of water and sanitation services ii. Development of virtual museum for school children and other stakeholders to engage them for learning various aspects of water, to act as a digital learning cum practice platform and serve as repository of knowledge and a medium of communication, awareness generation and sensitization. iii. **Water calculator -** A simple user/consumer based heuristic tool that can help users with responsible consumption and nudge towards choices that are water conserving in nature or against water intensive ones. Similar to energy labelling (1-5 stars), devices and basic consumer goods if labelled can help consumer choice. A data repository of water intensiveness in basic consumables (eg. A kilo of table sugar or a pair of footwear or A kilo of animal protein) can be built up in the process.
6	**Big data acquisition, digitalization and water management solutions**	Application of digital technology solutions in water sector is a recent trend, and its benefits and use are yet to be fully explored. This requires availability of data and digital access to data. It is also observed that time lapse between data collection, analysis and data based decision making is too long. Another grey area is the	i. Village level Sustainable water budgeting using integrated water and wastewater management approach. ii. Surveillance, monitoring and evaluation of household tap

		lack of information beyond the obvious; information on aquifers, groundwater level, dissolved contaminants etc. are few to name. Moreover, the water is predominantly managed by public sector entities and escalation of public perception about service delivery efficiency and water quality related issues take considerable time. **Solutions are invited for digital data acquisition and water management for quality and quantity of water using citizen based and other ways such as satellites, remote sensing, software sensors, digital twins of water infrastructure etc.**	water connection through community feedback loop iii. Mapping public perception of drinking water quality and quantity through mobile application iv. Digital underground map to assess rainwater harvest, monitor rainwater+ water level v. Hydrogeological capture of – Static & dynamic data vi. Mobile app based tools for collecting and reporting of water level, water quality, water infrastructure by citizens. vii. Satellite or remote sensing based methods for data acquisition and monitoring
7	**Moonshot** – This solution is not bound by the time frame of the AIM-ICDK challenge. Solutions for this challenge can be sent even after the applications close for the other challenges	Need to **develop a multi-sensor device** that makes the use of emerging technologies such as drones, robotics that can float in water, fly in air, navigate through cultivated land with an ability to make two way communication with data-cum-command center	

Application Process

1. The application for the challenge will only be accepted through the AIM-ICDK Challenge 2.0 portal and no physical application will be accepted or required.

2. **Format for Pitch deck:** The applicant is required to submit a pitch deck as part of the application in PPT/PPTX format only. The pitch deck should follow the below mentioned structure:
    A. For Young Academics:
        i. Applicant/Team Introduction (1 slide max)
        ii. Proposed solution and suitability for addressing the selected challenge (1-2 Slides max)
        iii. Road map for development during the period of February-May (1 slide max)
        iv. Demonstration of Prototype (if available, 1 slide max)

    B. For Young Entrepreneurs:
        i. Applicant/Team Introduction (1 slide max)
        ii. Proposed solution and suitability for addressing the selected challenge (1-2 Slides max)
        iii. Road map for development during the period of February-May (1 slide max)
        iv. Demonstration of Prototype (1 slide max)
        v. Plan for commercialization (1 slide max)

3. **Video pitch:** Applicants are required to submit a video pitch of duration 60-90 seconds. The evaluation team would look to derive two key outputs from the video pitch: a. Motivation of the applicant and b. Demonstration of technology/innovation. The applicant may look to use the structure defined in Pitch deck.

Evaluations/Key parameters for selection

The applications under both Academic and Entrepreneur categories will be screened for program eligibility and will be evaluated on below mentioned key parameters and subsequent criteria as noted below

Parameter	Criteria
Technology potential	• How is the solution different from the existing technologies? • Feasibility of the idea • Wide-scale solution adaptability • Product relevance in the market
Minimum Viable Product (MVP) Readiness	• Has the product idea been validated? • Are there early adopter customers for the new idea?
Innovativeness and Intellectual Property (IP)	• How innovative is the product? • Can the IP be registered? Or is it already done?
Deployment and Commercialization potential	• Is the innovation financially feasible? • Is the technology/solution/ product deployable? • Potential for commercialization
Business plan *(Only those who get short-listed are required to submit)*	• Is the business strategy/ technology/ product realistic and financially sustainable?

For any query please reach out to **aim.challenges@gov.in**