

Water Innovation Hubs for India:

Points of convergence for Indo-German cooperation and challenges of implementation

Lessons learnt in the transition from concept to practice

Results and recommendations

- Water Innovation Hubs facilitate **collaboration between India and Germany** and drive the implementation of innovations to ensure a **resilient water future**.
- Well-trained hub managers, together with the connection of Water Innovation Hubs to organisations with a long-term commitment to the local water sector, ensure local ownership, improve information flow and matchmaking, and significantly increase the chances of sustained success.
- Establishing stable networks with key stakeholders, such as local authorities, service providers, and private sector partners, ensures effective coordination, decision-making, and knowledge sharing. These networks help create scalable, innovative water solutions with a lasting impact.
- Water Innovation Hubs can **complement activities of other institutions**, such as the Chambers of Commerce, with more engagement on the local level and dedicated to the particular theme of water.
- Pilot projects should be designed to accommodate the needs and interests of diverse stakeholders, allowing for experimentation and context-specific solutions. Involving key players, like city administrations, enhances the projects' visibility and potential for wider adoption.
- Initiatives in Coimbatore and Solapur have shown that **smart water monitoring** can be **excellent showcases**, but both also demonstrate the challenges involved.
- Initial start-up **funding** is essential, but diversifying funding sources early ensures longterm sustainability. A gradual transition to selfsufficient financing will support the hubs' continued growth and drive innovation in the water sector.

Water Innovation Hubs support the achievement of Sustainable Development Goal 6 (SDG 6) by promoting the availability and sustainable management of water and sanitation for all. They also support SDG 3, 11 and 17 regarding Good Health and Wellbeing, Sustainable Cities and Communities, and Partnerships.



Why Water Innovation Hubs for India?

India, with its current population of around 1.5 billion, is on track to becoming the most populous country in the world. At the same time, its economy is experiencing rapid growth. This dynamic development presents opportunities and challenges, particularly in the area of infrastructure expansion. In many cities, the demand for essential services such as water supply and sanitation is increasing significantly. Meeting these needs in fast-growing urban areas requires **innovative, sustainable and stakeholder-driven solutions**.

Water availability, wastewater treatment, and the implementation of technological solutions are key areas where further development can support long-term water security. Many German stakeholders offer expertise and specialised technologies that can contribute to addressing these challenges. **Aligning** technological solutions **with local needs** presents significant potential for progress in the Indian water sector.

Collaboration based on partnership, combined with innovative digital technologies, can play a vital role in strengthening water security. Initiatives focused on exchange, networking, and knowledge transfer contribute to a **sustainable future**.

Water Innovation Hubs provide an opportunity to effectively address these challenges and potential solutions.

What are Water Innovation Hubs?

Water Innovation Hubs serve as **network and project centres** dedicated to the sustainable development of the Indian water sector and the strengthening of Indo-German cooperation.

Through pilot projects and **showcases**, they provide innovative momentum by adapting, customising, and implementing new technologies to enhance water quality, supply, and wastewater treatment within local and regional contexts.

These hubs create a dynamic **forum** and network where stakeholders from government agencies, municipalities, private enterprises, civil society, and academia collaborate, contributing their expertise. They enable knowledge transfer, do capacity building, and drive awareness while offering the possibility to network locally and globally. By facilitating knowledge exchange, fostering the sharing of challenges and solutions, and supporting capacity building among all participants, they promote co-creation and enhance matchmaking & cooperation. In this way, Water Innovation Hubs evolve into **think tanks** for the regional water sector.

For specific challenges, **matchmaking** opportunities enable potential partners to connect and engage in tailored, performance-based collaborations. This structured network of partners enhances efficiency, reducing time and increasing quality when initiating and implementing projects. As a result, Water Innovation Hubs provide a funnel for deploying complementing expertise to leverage synergistic potential of a vast Indo-German community dedicated to sustainable water management.

Depending on their integration within the regional context, Water Innovation Hubs can serve as points of contact for the Indian public. Functioning as a comprehensive **water lab**, they can facilitate research, innovation, and practical solutions. For instance, if linked to monitoring programs, they can provide valuable information, raise public awareness through targeted initiatives, and drive engagement on critical water issues.

How to consider Water Innovation Hubs as a business model?

For Water Innovation Hubs to effectively support the development and implementation of innovative water technologies and solutions in India, a well-structured business plan is essential. Such a plan ensures financial sustainability by diversifying revenue streams and efficiently managing operational costs to maintain a balanced and self-sustaining model.

How can Water Innovation Hubs generate revenue streams?

To support their operations and activities, Water Innovation Hubs can generate income from multiple sources:

Participation Fees for Events

The hubs can organise seminars, sales events, and technical workshops, generating revenue through participation fees. The number of participants, event frequency, and locations affect this revenue stream.

Membership Fees/Levies

Hubs can introduce a membership model, charging fees to organisations and individuals seeking continuous engagement and access to hub resources, networking opportunities, and specialised services.

Grant Funds, Subsidies, and Project Funding

The hubs can seek grant funds, government subsidies and funding through research projects to finance their activities and support innovation initiatives.

B2B Matchmaking Services

By offering tailored B2B matchmaking opportunities such as delegation trips and online networking, hubs can generate income from companies seeking to connect with potential partners and customers.

Data Sales

Hubs can collect, analyse, and monetise valuable data insights on water resource management, environmental monitoring, and technological innovations.

CSR Funds

Corporations committed to sustainability may provide CSR (Corporate Social Responsibility) funding to support the hubs' activities, further strengthening financial resources.

What costs need to be accounted for in Water Innovation Hubs?

To effectively operate and deliver value, the Water Innovation Hubs will incur the following key costs:

Hub Manager

A hub manager oversees operations, manage partnerships, and drives strategic initiatives. Their salary and benefits is be a significant component of operating costs.

Rented Office Space

The hubs require rented office space, covering costs such as rent, utilities, and necessary modifications to ensure a functional working environment.

Standard Office Equipment

Basic office equipment, including desks, chairs, computers, and other necessary supplies, need to be procured for efficient hub management.

Marketing, Online Presence/Website:

Marketing materials such as flyers, as well as a professional website, should be developed to showcase the initiatives of the hubs, facilitate engagement with stakeholders, and provide key resources and event information.

Travel Costs:

Travel costs include transportation, accommodation, meals, and additional expenses for business trips necessary for networking and business development of the hubs.

Occasional Services:

Services such as events and trade fair appearances incur costs for catering, venue rental, materials, and registration fees.

Outsourced Services

To optimise efficiency, hubs can outsource key services such as (a) professional tax registration and company registration, (b) accounting, tax consultancy, and HR services, (c) IT support and digital marketing (as needed).



What is the role of pilot projects in Water Innovation Hubs?

Pilot projects play a crucial role in Water Innovation Hubs by serving as a **platform for testing**, **validating**, **and demonstrating** innovative water technologies. Through technology showcases, these hubs enable stakeholders to witness cutting-edge solutions in action, providing valuable insights into their realworld applications. Particularly important is the adaptation of innovations to local needs.

Additionally, pilot projects **facilitate collaborative** research **initiatives** with universities, industry stakeholders and public authorities, fostering innovation and knowledge exchange. By offering a comprehensive service and product portfolio, Water Innovation Hubs support stakeholders at every stage of their innovation journey, from initial concept development to large-scale implementation.

How can smart water monitoring serve as a pilot project?

Smart water monitoring can serve as a pilot project by increasing data availability on crucial water topics in order to promote **data-driven decision-making** and to improve **water management strategies**. In the long term, it provides a foundation for evaluating the effectiveness of these strategies.

In Coimbatore and Solapur, the AQUA-Hub initiative prepared a smart monitoring concept to monitor water quantity and quality in the urban lake system. This concept combines sensor-based and laboratorybased analyses, ensuring a high-resolution understanding of water conditions. The concept is ready for implementation and shall support the identification of suitable remediation strategies for contaminated surface waters. Parts of the concepts were implemented in both cities: in Coimbatore there were training sessions and a series of measurements on the discharge regime in urban water bodies, in Solapur there was a showcase that contributed to the monitoring of efficient drinking water treatment.

By continuously monitoring key water parameters such as pH, electrical conductivity, and heavy metal concentrations, the system could help identify **pollution hotspots** and **track changes over time**, e.g. from government interventions. The data can be uploaded to a Water Data Management System (WDMS), which was designed to visualise trends and enable stakeholders—including government bodies, industries, and researchers—to make informed decisions.

One of the most valuable aspects of this approach is the **stakeholder involvement**. The project encouraged collaboration between German technology partners and local academic institutions, ensuring both technical expertise and contextual knowledge are leveraged. This would strengthen policy planning, support wastewater treatment innovations, and help build a sustainable urban water management framework. Furthermore, by making data accessible, the smart monitoring system is expected to foster **public awareness and engagement**. It is meant to serve as a template for other cities looking to implement technology-driven solutions for water conservation and pollution control. If successfully implemented, this pilot project could pave the way for nationwide adoption, supporting India's water sustainability goals.

What are the challenges and hurdles in realising Water Innovation Hubs?

Partnership Stability and Ownership

The implementation of successful water innovation hubs and related pilot projects in the water sector requires stable partnerships and well-aligned interests. However, frequent changes in key positions, particularly within public administration, can hinder implementation. Long-term success is largely dependent on active local involvement, which, despite its recognised value, is not always guaranteed due to institutional barriers and competing priorities. Stable communication and continuous engagement from local stakeholders are crucial to driving long-term ownership forward.

Coordination and Expertise Requirements

Hub managers play a pivotal role in representing the Water Innovation Hubs and bringing them to life through subject-matter expertise, strong communication skills, and language proficiency. However, filling this key position poses significant challenges: the search for highly qualified professionals who are available on a long-term basis proves difficult in the face of a highly competitive job market. Attractive alternative employment opportunities further complicate efforts to recruit and retain suitable candidates for sustained engagement.

Building Trust Across Borders

Another crucial aspect is the development of trust between the involved stakeholders from Germany and India. Building such trust is a time-intensive process that requires consistent on-site presence, particularly during the initial phase of the Water Innovation Hubs, and demands an investment in the necessary resources. However, a trust-based collaboration is essential for establishing long-term partnerships.

Technology Gaps and Collaboration

A key element for the success of pilot projects is collaboration among various partners in the technology sector. As no single water technology company can cover all aspects of the field, networking and transparency regarding technological capabilities are of great importance. Identifying technology gaps, connecting key stakeholders, and presenting potential solutions at an early stage are critical challenges which, in addition, become increasingly complex with the growing number of actors involved.

Balancing Expertise, Local Knowledge and Constraints

Developing appropriate solutions requires balancing technological expertise, local knowledge, institutional structures, diverse interests, and constrained funding conditions. This balance is key to ensuring that solutions are innovative, adaptable, and sustainable. However, achieving this requires strong negotiation skills, flexibility, and a high level of commitment from all stakeholders.

Investment Barriers

Attracting investments from both Indian and German stakeholders remains a challenge due to differing financial models and risk perceptions. Private sector engagement is often limited, as companies seek clear and immediate returns on investment. Additionally, the implementation of advanced water technologies typically requires substantial upfront investments, which can slow down adoption and hinder the scaling of such projects.

Integration into Existing Systems

Integrating new technological solutions into India's existing water systems is a complex challenge. The infrastructure conditions for wastewater disposal and drinking water supply in India and Germany are often not comparable. Successful integration into existing systems, along with any necessary transformations, requires detailed planning and coordination to prevent inefficiencies and ensure smooth operation.

Regulatory Context

Implementing German water technologies in India is challenging due to differing standards, approval processes, and local procurement rules. Price regulations, environmental laws, and state-specific policies add complexity. Success requires compliance, partnerships, and alignment with local frameworks.

What are the lessons learnt?

- The presence of a local hub manager posed a significant asset in the implementation of the Water Innovation Hubs. They play a critical role, must be well-compensated, highly networked, communicative, and of high expertise.
- ✓ Ideally, the hubs should be linked to an organisation that can take **ownership** and demonstrate a long-term commitment to developing the local water sector in the respective city or region. This can significantly increase the chances of success, provided the hub is allowed to operate with a certain degree of independence.
- ✓ Stable networks with competent, motivated, and proactive contacts persons who are empowered to make decisions and have direct access to higher-level decision-makers are essential within key administrative bodies, authorities, service providers, and utilities.
- ✓ Water Innovation Hubs require initial start-up funding, which should be supplemented as soon

as possible by additional funding sources to ensure a transition to sustainable, self-sufficient financing.

- ✓ Pilot projects require flexibility in their implementation framework and the ability to accommodate competing interests. For instance, pilot projects should be allowed to address the needs of different stakeholder groups, even if not all stakeholders involved due to other priorities. It is essential to allow the freedom to create the most effective and relevant showcases.
- ✓ In addition, pilot projects that involve key stakeholders, such as the city administration, can have a powerful effect, generating momentum for greater visibility and dissemination.
- ✓ Long production, delivery, and deployment times for technologies between Germany and India pose significant risks due to potential changes in the local situation, which can reduce the chances of success. A timeline with built-in **buffers** and **early risk analysis** are essential. In addition, there is a need for consistently reliable contacts and sustained interest within the supporting local institutions.



Additional materials

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