



Climate & Development  
Knowledge Network

# LEARNING STORY

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## Key messages

- Facilitating evidence-informed participatory dialogues in the urban water sector in Dhulikhel in Nepal has been shown to build relationships, strengthen capacities and harness scientific expertise, along with co-developing practical experiential knowledge with stakeholders to enhance local resilience.
- This approach to multi-stakeholder water governance provided an opportunity to address existing conflict related to water supply amongst diverse stakeholder groups, by integrating different voices for more equitable, accepted and owned solutions.
- When involved in these participatory spaces, the Dhulikhel local authority began to appreciate the value of community-based water schemes and dialogue as a crucial complement to physical infrastructural solutions. The municipality also began to see the value of research in better informing its decision-making processes.
- Collaborative piloting of proposed measures to address water challenges helped to bring together evidence from multiple knowledge systems and prioritise particular interventions. Partnerships were also created for their design, testing, funding, implementation and monitoring. This ensured ownership and sustainability, bolstered in many cases by the institutionalisation of these piloted solutions.

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**This learning story forms part of the CDKN *Knowledge for Change* series, which reflects on the common challenges, lessons and successes CDKN and its partners have encountered in facilitating evidence-based decision-making to accelerate climate action. The aim of this work is to investigate different tools and approaches for enhancing the use of knowledge in decision-making, the barriers encountered in facilitating change, and useful lessons for others who navigate similar challenges.**

## Collaborative urban water management bridges knowledge and action in Nepal

This learning story shares the work done by the Southasia Institute of Advanced Studies (SIAS) over four years (2016–2020) to promote evidence-based action on sustainable water resource management in Dhulikhel, Nepal. SIAS, a policy research institute based in Kathmandu, played the role of knowledge broker as they produced, brought together and synthesised knowledge from multiple sources, convened stakeholders to discuss water management challenges, built and enhanced relationships and networks among multiple actors, and contributed to strengthened capacities and action around water issues.



Aerial view of Purano Bazaar area, Dhulikhel. © Dhulikhel Municipality

## Dhulikhel's water challenges

Dhulikhel is a small hill town located about 30km from Nepal's capital, Kathmandu. Like many Himalayan towns, over recent decades it has increasingly suffered from water scarcity due to rising urbanisation and infrastructure development, brought about by the expansion of tourism and demand for services linked to its university and hospital. The town has historically relied on three main water sources: (1) a series of water transfers<sup>1</sup> from the upstream Roshi River and its tributaries, (2) groundwater extraction from deep aquifers, and (3) local springs.

With the growth of the town's population and its prominence as a market and education hub, the demand for water has increased in Dhulikhel, with conflicts arising among different types of users (such as commercial use versus drinking water). Recent years have also seen the conflict escalate between Dhulikhel and rural upstream communities due to the pressure exerted on the water supply in the Roshi River catchment.

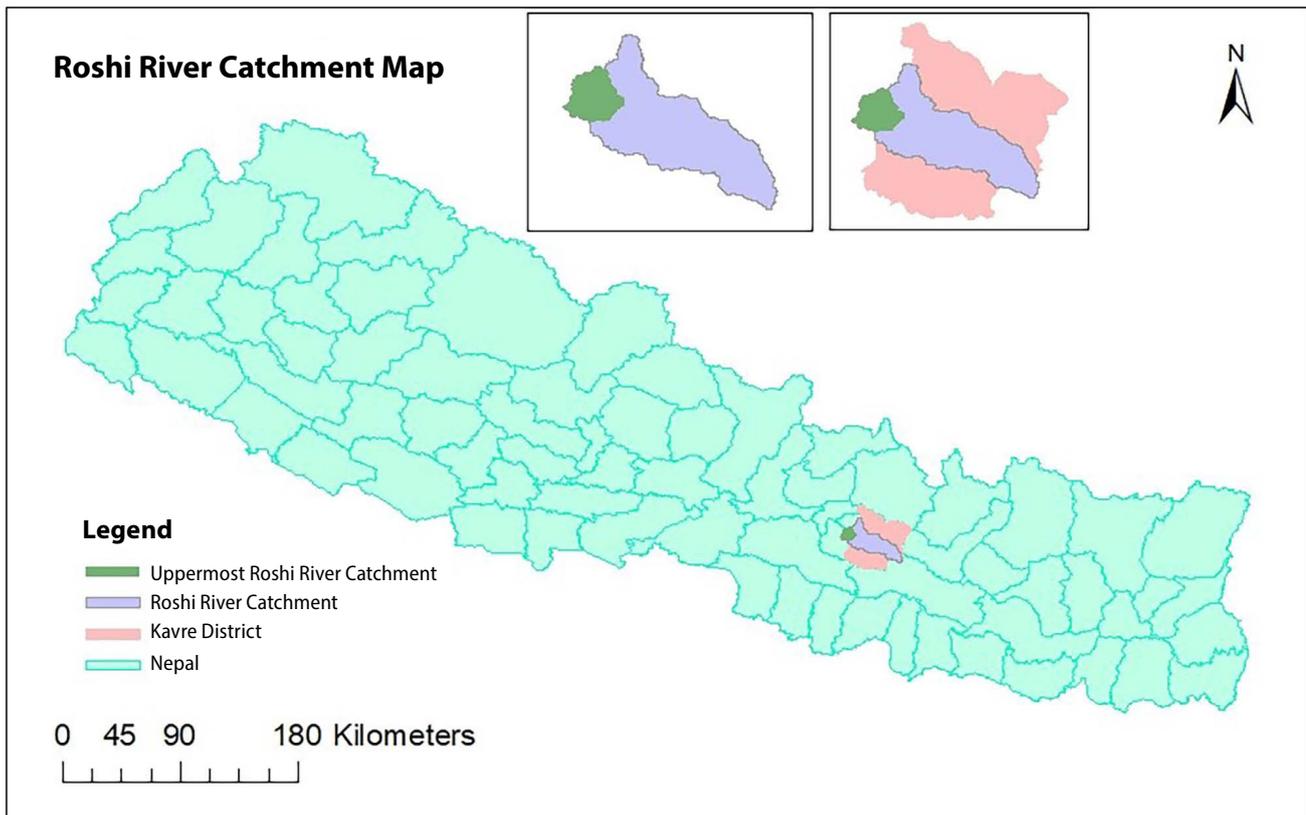
To cater to this increasing demand in the area, and to encourage a collective effort among the municipalities to draw water through a single pipeline system, the Kavre Valley Integrated Water Supply Project (KVIWSP) was launched in 2012. The project was financed through a 35% loan and 50% grant from the Asian Development Bank and 15% user fees collected from the local residents. This financing mechanism aimed to minimise operational costs and strengthen social relationships, thereby reducing future water disputes.

In 2014, however, Dhulikhel's population increased threefold, when five adjoining Village Development Committees were merged with the municipal administrative boundary. These additional wards were more rural in character, thus increasing the water demand for agricultural purposes. Furthermore, the presence of a rugged terrain has made the expansion or distribution of water pipelines and wastewater infrastructure services infeasible in several isolated and rural areas. These challenges have further marked a socio-economic divide

between the urban and rural areas, and the adjoining municipalities continue to struggle to develop a robust water planning and governance system to tackle their water conflicts.

## Addressing conflict and promoting collaboration through inclusive water governance

To address these challenges, SIAS helped design a participatory process called '*Pani Chautari*', which is loosely translated as 'water forum'. *Pani Chautari* involves a series of multi-stakeholder, evidence-informed dialogues that work towards creating a single platform for collaborative catchment-level water management. These forums bring together scattered stakeholders from different sectors and institutions to collectively discuss and identify feasible and implementable solutions. This process has led to building new partnerships and identifying synergies, as well as addressing conflicts on access to and sustainability of water resources in the region.



Roshi River catchment, Kavre District. © Anjit Gautam and Tikeshwari Joshi

Furthermore, the *Pani Chautari* process has also become an example of collaboration for evidence-informed policy-making more broadly, which has helped advance the decentralisation process in Nepal. In 2015, with the promulgation of the new constitution, local governance structures in Nepal were given the mandate to formulate policies. But, as local government authorities (municipalities) were formed, it became clear that they did not have policy-making expertise and

experience,<sup>2</sup> leaving an open door for new types of collaborations to form. The *Pani Chautari* model and the partnership between the Dhulikhel municipality and SIAS was one such example.

### Establishing *Pani Chautari*

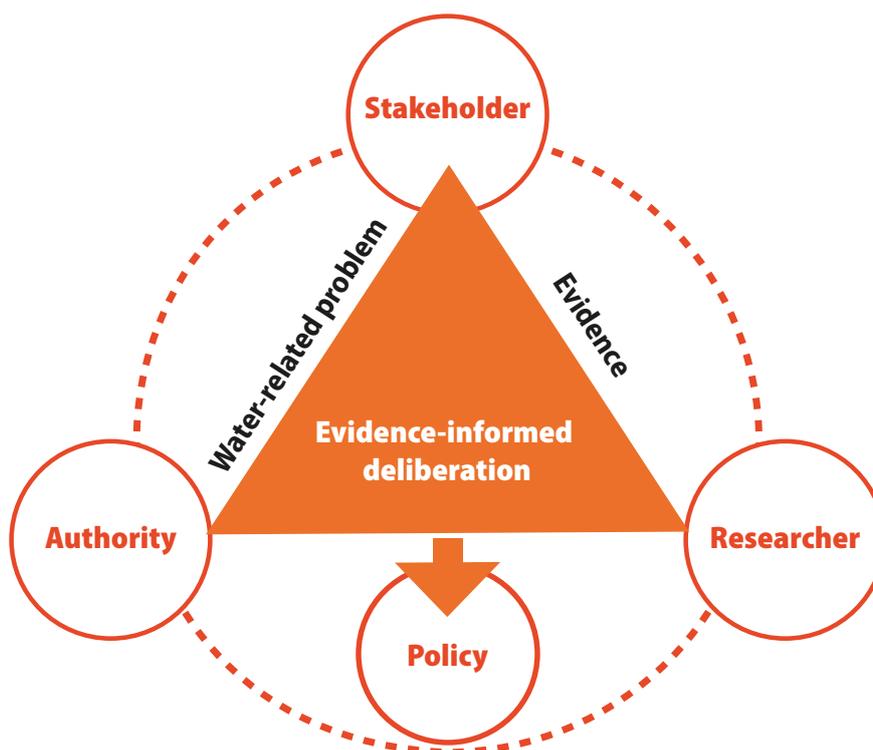
Between November 2016 and February 2020, SIAS, in collaboration with the Dhulikhel municipality, undertook a series of *Pani Chautari* workshops that sought to find solutions to Dhulikhel's

water challenges. While the agenda for each *Pani Chautari* evolved iteratively over time, the essence remained the promotion of a constructive dialogue among diverse stakeholders on the existing water crisis. This included local government leaders, community members, social and environmental policy researchers, private sector heavy water users (such as hospitals, hotels and stone quarry industries) and academic institutions in and around Dhulikhel.

### Five functions of the *Pani Chautari* methodology<sup>3</sup>

- To facilitate co-learning both as a culture and problem-solving tool among diverse stakeholders of the city water supply system.
- To strengthen the capacity of city governments to plan and implement adaptive water management.
- To deepen deliberative processes in water management and governance through harnessing local government powers, diverse types of knowledge, stakeholder commitments and research-based evidence.
- To provide a conflict management platform for water governance and access.
- To create a robust interactive process of action-oriented and policy-relevant research to generate salient policy insights and practitioner-oriented knowledge products.

Figure 1. The *Pani Chautari* concept (based on Devkota et al., 2020)



## The Pani Chautari process

Each *Pani Chautari* follows a sequence of steps:

### Step 1: Identifying the issues

The first step involves identifying water-related issues to be discussed at the *Pani Chautari*. These topics are informed by the findings of the SIAS team's field research conducted in the region, as well as formal and informal discussions with different stakeholders (including government officials, industry representatives, local leaders and residents). The chosen issues can deal with problems that water users (at the individual or household level) confront daily, challenges faced by the water management bodies, or

the vision and priority of the local government.

In Dhulikhel, some issues were also raised during discussions among stakeholders or when reflecting on previously conducted dialogues. Given the limited participation of women in early dialogues, for example, a specific *Pani Chautari* was dedicated to gender issues and prioritising the role of women in water management. Other sessions focused on key issues including enhancing private sector engagement, upstream-downstream linkages and groundwater recharge.

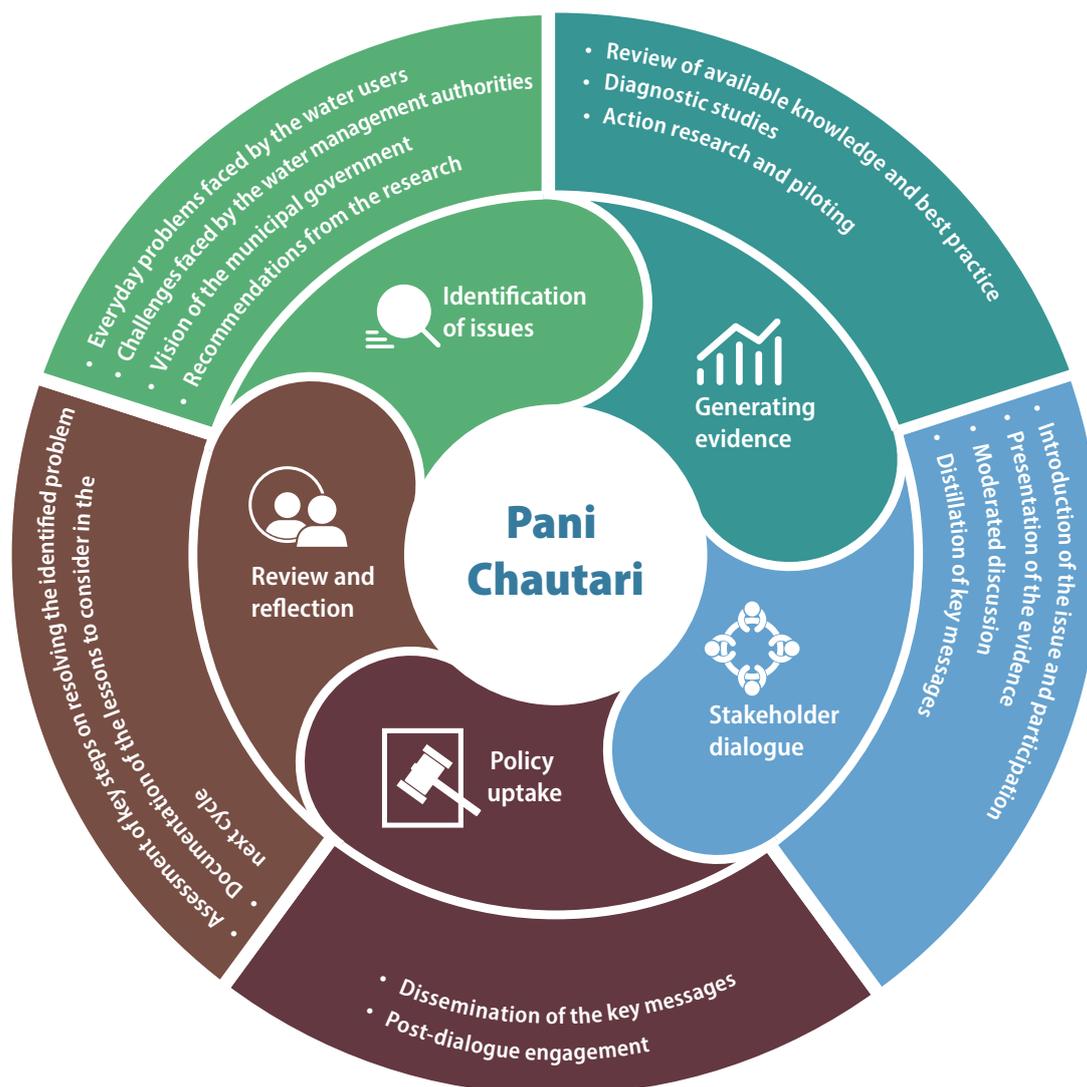
### Step 2: Generating evidence

The second step involves generating knowledge or evidence through

methods such as a review of literature and best practices, as well as interviews, field visits and quick and focused studies as and when needed. One such study conducted by the SIAS research team was an analysis of climate data over the past four decades, which showed a decline in the average rainfall in the region.<sup>4</sup> The data revealed changes in rainfall patterns and stream flows, which have led to prolonged dry spells and a consequent drying up of local spring sources.<sup>5</sup>

In addition to new research, the *Pani Chautari* dialogues rely on pre-existing knowledge and lessons on water-related issues (including good practices from other towns), which are also used to formulate local policies.

Figure 2. Cyclical process of consultative decision-making through *Pani Chautari*<sup>8</sup> (Devkota et al., 2020)



In the past, evidence has also been generated from an assessment of pilot interventions and field testing of tools and technologies, which was then used to assess the feasibility of potential solutions.

### Step 3: Stakeholder dialogue

In the third step, the evidence is presented at the *Pani Chautari*. This evidence is translated and simplified so that stakeholders can easily understand the research results. The presentations then form the context for initiating carefully facilitated discussions and mutual dialogues among the participants.

A number of participatory tools are used to help stakeholders broaden their understanding and views of the issues so that they can reach joint solutions collaboratively. These approaches include using visual materials to make the discussions more engaging, presenting in the local language, and adopting different formats for group work ranging from panel and round-table discussions to activities, such as team-building games or solving case studies.

At previous events, carefully constructed moderation and guiding questions have ensured that participants did not deviate from the topic and focused on finding solutions,

rather than just pondering the problems or inefficiency of the water management system.

As part of the session agenda, a *Pani Chautari* event ends with take-home messages that either describe the solution in the policy or practice domain that was agreed upon or highlight questions for further research and deliberation. SIAS would compile the key messages and decisions taken during the dialogues into a 'declaration paper', which helped to build consensus among stakeholders, despite the existence of diverse interests and opinions.

### Step 4: Policy uptake

A key step for policy uptake requires disseminating the outcomes through the well-documented declaration papers, articles in the news media,<sup>6</sup> joint press releases (issued by the municipality and SIAS), blogs and opinion articles. After the dialogues, detailed proceedings, reports and policy briefs were targeted at different audiences to offer insights, lessons and recommendations. Post-event engagement and follow-up with the stakeholders to prioritise the issues and discuss different policy options, particularly among the municipal authorities and those who would benefit from a potential policy change,

was a critical factor in the success of the *Pani Chautari* process.

For example, during the 6<sup>th</sup> *Pani Chautari* conducted in February 2020, which focused on institutional mechanisms for upstream and downstream collaboration for water, the Mayor of Dhulikhel emphasised that the stakeholders should not limit their involvement to collecting water from the source and providing compensation, but rather make individual efforts to contribute to resource conservation and sustainability.<sup>7</sup> For this, the Mayor proposed the formation of a water council with representation from both upstream and downstream communities and other related stakeholders to ensure collaboration and sustainable use of water (see Box 1).

The statement of Dhulikhel's Mayor was a significant step forward to achieve greater consensus on water management in the region. SIAS's role was then to make sure that the Dhulikhel municipality followed through on their promise to form a water council. This involved the SIAS research team arranging a follow-up lunch to review the outcomes of the *Pani Chautari*, gather any feedback to consider for future activities and, significantly, outline the details for establishing the water council with the Mayor and his team.

### Box 1: Managing diverse interests through trust-building

One of the key areas of conflict in Dhulikhel was between upstream and downstream communities, given the long history of contestation over sharing water. Although some meetings and negotiations between the political leadership of these communities were held from 2010 (which resulted in an agreement to offer cash payments and other benefits to upstream authorities in exchange for the water), prior to the *Pani Chautari* there was no platform for these stakeholders to come together.

The first stakeholder engagement meeting in late 2013 was riddled with conflict, as each group (e.g., stone miners, farmers, those affected by the water supply project intended to transfer water downstream, and different political groups) had their own interests, with little motivation to negotiate. These groups also felt that the researchers had their own agenda and did not welcome them. Over time, however, the researchers earned their trust, and the usefulness of the action research process gained credibility. This trust emerged in large part as SIAS began working closely with the different interest groups through the research, showcasing their issues in different national platforms, participating in different meetings, and contributing to some policy processes.

At the same time, the *Pani Chautari* convincingly presented the results of the numerous years of research and created a forum for discussing issues openly, including those concerning the different interest groups. In a later session, the Mayor of Dhulikhel proposed establishing a water council comprising members of both upstream and downstream communities to function as an institutionalised platform for longer-term collaboration going forward.



Fifth *Pani Chautari* on women's issues in managing water held in April 2019. © SIAS

## Key enablers of success

While the *Pani Chautari* is context specific and its approach has been shaped from the challenges faced by a particular set of stakeholders and circumstances, its essence and institutional structuring can be adapted universally. The key to evidence-based public policy-making is the interaction between scientists, policy-makers and citizens. In the process, scientists provide assessments, generate information or gather evidence to inform policy processes, while citizens bring in practical experience and local knowledge to inform such decisions. Considering these elements, the different factors that resulted in the success of the *Pani Chautari* are discussed below.

### 1. Co-designing and co-owning the *Pani Chautari*

The *Pani Chautari* process was strongly co-owned by the Dhulikhel municipality and the town's water-related stakeholders from the beginning. The first dialogue SIAS convened invited, among others, representatives from local political parties, community water users, women representatives and the forest

users committee. The concept of having a platform to discuss water issues was presented. Here, the participants considered who should comprise the membership of the platform going forward, including whether there should be fixed regular members.

In the second dialogue, the series of steps to be followed as well as a name for the platform were discussed. Once the steps were determined, stakeholders took part in each of them, from identifying the focus of each dialogue, to being part of the research process through collecting data and deliberating on the results. Local community members were, for instance, trained to measure water quantity from different sources with a bucket method and a stopwatch, and to send the results back to the research team via Facebook messenger. Local academic institutions and experts were involved in co-producing the knowledge that was presented and discussed in the dialogues, or in piloting some of the solutions that were jointly deliberated. Being closely involved in each step of the process, as well as in the development of the *Pani Chautari*, therefore, meant that this was *their* process.

### 2. Integrating multiple sources of knowledge

*Scientific, quantitative data and evidence on water availability and access*

A lack of local level data – especially pertaining to environmental management, such as historical data on rainfall, temperature, land-use patterns, etc. – is characteristic of many Himalayan towns, including Dhulikhel. Data scarcity can often be used as a reason for delaying decision-making on addressing environmental issues that conflict with socio-economic concerns.

SIAS's initial process of data collection – conducted primarily through key informant interviews and the review of archival documents – showed that the downstream urban communities, within the core and the peripheral areas of the Dhulikhel municipality, were experiencing water insecurity. This was due to the contested demands made by upstream rural communities, which included selling water access to Dhulikhel, as well as imposing the constitutional right of rural communities to assert claim over water and other natural resources. Thus, with tensions between the upstream and

downstream communities mounting over decades of negotiations, policy decisions had often been based on partial knowledge of the facts or prejudices that were guided by local stakeholder interests and socio-political positions.<sup>9</sup>

To address this challenge, the SIAS team conducted a range of quantitative and qualitative research. Findings were refined through stakeholder workshops and roundtables, expert field observation and secondary research such as the review of archival records – including agreement papers, meeting minutes and municipal records, among others. In the first instance, the researchers undertook interviews and analyses to provide scientific quantitative data and evidence on water availability and access. This was complemented with qualitative data on water governance, including key aspects of contestation over water by upstream and downstream communities.

The evidence generated from the research provided the stakeholders with an understanding of water availability and current management practices in the region. The combined pressure of rapid urbanisation, which resulted in an exponential increase in the demand for water, and the adverse impacts of climate change, which caused reduced and erratic rainfall, were both responsible for reducing the overall water availability.

### *Harnessing local knowledge and experience*

Early stakeholder engagement workshops highlighted specific research gaps, such as those pertaining to the impact of land-use change on the upstream watershed, or ways to conserve and use recycled water in the region. Given that some of these questions were outside the scope of the SIAS research project, local experts present in the workshops, such as those belonging to the long-standing community-based water user committees or technical experts

working in the local government, were able to address these knowledge gaps.

Their experiential, practice-based, applied knowledge from the ground, complemented by institutional memory, was pooled and harnessed. For example, evidence on declining water flow from local sources was generated through collaboration with local knowledge holders, experienced water users and researchers. The expert practitioner observations from the field became a critical element in the dialogues, with local leaders and stakeholders complementing the scientific evidence that researchers shared.

### *Collation of diverse types of knowledge*

Rather than being limited by scarce (national-level and localised) data, the SIAS team served as a mediator and harnesser of a range of diverse expertise and knowledge, helping to integrate these inputs for improved decision-making.

In practice, multiple discussions during a series of roundtable workshops and field visits provided the means to collate and assess the different sources of knowledge, with the traditional and experiential complementing the scientific assessments and secondary research. For instance, through a visit to the upstream Roshi watershed, the group of *Pani Chautari* participants

could see current changing land-use patterns first hand, which included significant deforestation, conversion to agricultural land, and the establishment of stone quarries.

To seek solutions to the declining spring water levels, a field visit was conducted to a neighbouring village that was revitalising its traditional ponds through groundwater recharge. This was complemented by the researchers' scientific reviews, which were presented to stakeholders during the *Pani Chautari*. When it came to weighing the applicability of potential solutions to Dhulikhel, the insights gleaned from the field visits provided important evidence.<sup>10</sup>

The *Pani Chautari* process thus opened the door for stakeholders to translate ideas into action. Research institutes such as Kathmandu University, NGOs and water user committees played an important role in highlighting the importance of conserving local water sources and maintaining small-scale community-managed schemes. These groups also continue to play a critical role in the sustainability of water sources, especially during disasters, given they are more resilient and nimble than the larger-scale schemes which, when damaged by floods or earthquake, affect more users and are slower to start functioning again.<sup>11</sup>



Aerial view of Dhulikhel Municipality Building. © Dhulikhel Municipality

Producing and integrating multi-disciplinary research that sheds light on the different alternatives to meeting water needs proved critical.

### *Packaging outputs in simplified and local language*

A core focus of the *Pani Chautari* was to ensure that research results were presented back to the stakeholders in a simple and easy-to-understand format. Presenting the data and insights from the research in the vernacular language proved to be effective and allowed for greater readership. Developing visual presentations with illustrations and infographics from local data sets and sharing cases and best practices from other cities in Nepal and from across the world that resonated with the Dhulikhel context also proved successful. Learning about similar challenges people face globally and how they were overcome encouraged Dhulikhel stakeholders to implement the collaborative solutions identified.

### **3. Engagement and relationship building**

To strengthen engagement and collaboration, SIAS ensured that events such as water forums, training programmes and roundtable discussions were not only co-organised

with support from the different stakeholders, but also focused on the issues they faced. Also, these events sought to prioritise issues from the stakeholders' viewpoint, understanding what was most important to them and allowing them to identify with the overall agenda of the *Pani Chautari*. This reassured stakeholders that their participation was essential for solving problems.

For instance, early *Pani Chautari* workshops highlighted the tensions within the community on the rights of large private water users and their role in urban water management. To better understand these issues and identify possible solutions, a specific *Pani Chautari* was organised that focused on how private users might potentially contribute to improved water security in Dhulikhel. As a result of this event, the Hotel Association and Chamber of Commerce of Dhulikhel committed to invest in water-efficient technologies to run their businesses (thanks also to incentives for rainwater harvesting and water recycling) and to contribute to the sustainability of the water sources in the region.

Similarly, through the participation of the forest users committee in the *Pani Chautari* process, suggestions

were made to develop an institutional mechanism for inclusive and equitable water governance. The discussions held at the forum allowed the forest users to become aware of the relationship between watershed and forest management, and highlighted the need to include watershed management activities in forest management plans.

Evidence from across the world suggests that effective water management takes place if there is meaningful participation of women in the decision-making process, as this helps subvert gender subordination, promotes women's empowerment, and ensures effective water delivery. Thus, the inclusion of diverse stakeholders in the discussions held in the *Pani Chautari*, especially women and other vulnerable members of society, was seen as an integral element to measure the success of a *Pani Chautari*.

### *Strengthening formal engagement events with informal pre- and post-Pani Chautari meetings*

SIAS conducted several informal meetings with key actors, including municipal authorities, to adequately plan the *Pani Chautari*, determine the issues to be discussed during the dialogues, and ensure qualitative



Mayor of Dhulikhel Municipality presenting his remarks during Dhulikhel's 6<sup>th</sup> *Pani Chautari*. © SIAS

engagement from different stakeholders such as NGOs, water user committees, research institutes, and women's groups. SIAS also conducted several pre- and post-*Pani Chautari* meetings to inform key actors about critical issues and insights based on the research and realise the ideas discussed in the forums, given that people tended to often be quiet and formal in these events and issues remained unaddressed.

These customised meetings were successful in building understanding and rapport between the researchers and the stakeholders, allowing them to feel comfortable to participate in the larger dialogues. SIAS also made sure that suggestions and issues raised during these meetings were addressed or raised during the *Pani Chautari*. These gestures helped in building trust among different stakeholders as well as overcoming biased approaches and mindsets. Many of the meetings were of an informal nature, such as drinking a cup of tea together while exploring issues and devising ways to bring the solutions discussed in the *Pani Chautari* to life.

### *Using the knowledge production process to strengthen stakeholder engagement*

Stakeholders were also involved in the production of knowledge products, such as articles and policy briefs. This process helped improve the quality of engagement as well as build a sense of responsibility amongst stakeholders. The insights, lessons and recommendations from the *Pani Chautari* events were disseminated through detailed reports on proceedings and policy briefs outlining key messages and proposed solutions targeting different audiences for policy uptake. Involving the local media was also an effective strategy to ensure that stakeholders, especially local community leaders and decision-makers, were recognised for their efforts. SIAS, for example, commissioned [a video](#) about the

*Pani Chautari* process that was shown on Nepali national television and showcased the successful measures being undertaken in the town to address climate-resilient water management.

### *Cultivating long-term relationships with the municipality for more evidence-based decision-making*

A key element of the success of the *Pani Chautari* was the quality of the relationships built with stakeholders. Many extended beyond the short-term requirements regarding the project or coordination arrangements for the *Pani Chautari*, and several engagements had a longer-term orientation, both formal and informal in nature.

For instance, the SIAS team made efforts to engage with the Dhulikhel municipality from the beginning and keep them at the forefront of decision-making. Besides being the co-host for organising *Pani Chautari*, the Dhulikhel municipality formally invited and successfully brought all the relevant stakeholders – such as the water user committees, water management board, upstream municipalities or wards and women's groups – together to attend the water forums and conduct fruitful discussions. To achieve this, SIAS established a relationship of trust and partnership through continuous engagement with the municipality officials through different informal and formal channels such as:

- Inviting the Mayor of Dhulikhel as a keynote speaker at SIAS-organised national events.
- Continuously communicating with the officials and keeping them informed of the progress (including informally through WhatsApp, or by using Facebook and LinkedIn to communicate the outcomes of the different *Pani Chautari* events).
- Engaging with top leadership for endorsements and with relevant technical staff, to ensure ideas discussed during the *Pani Chautari*

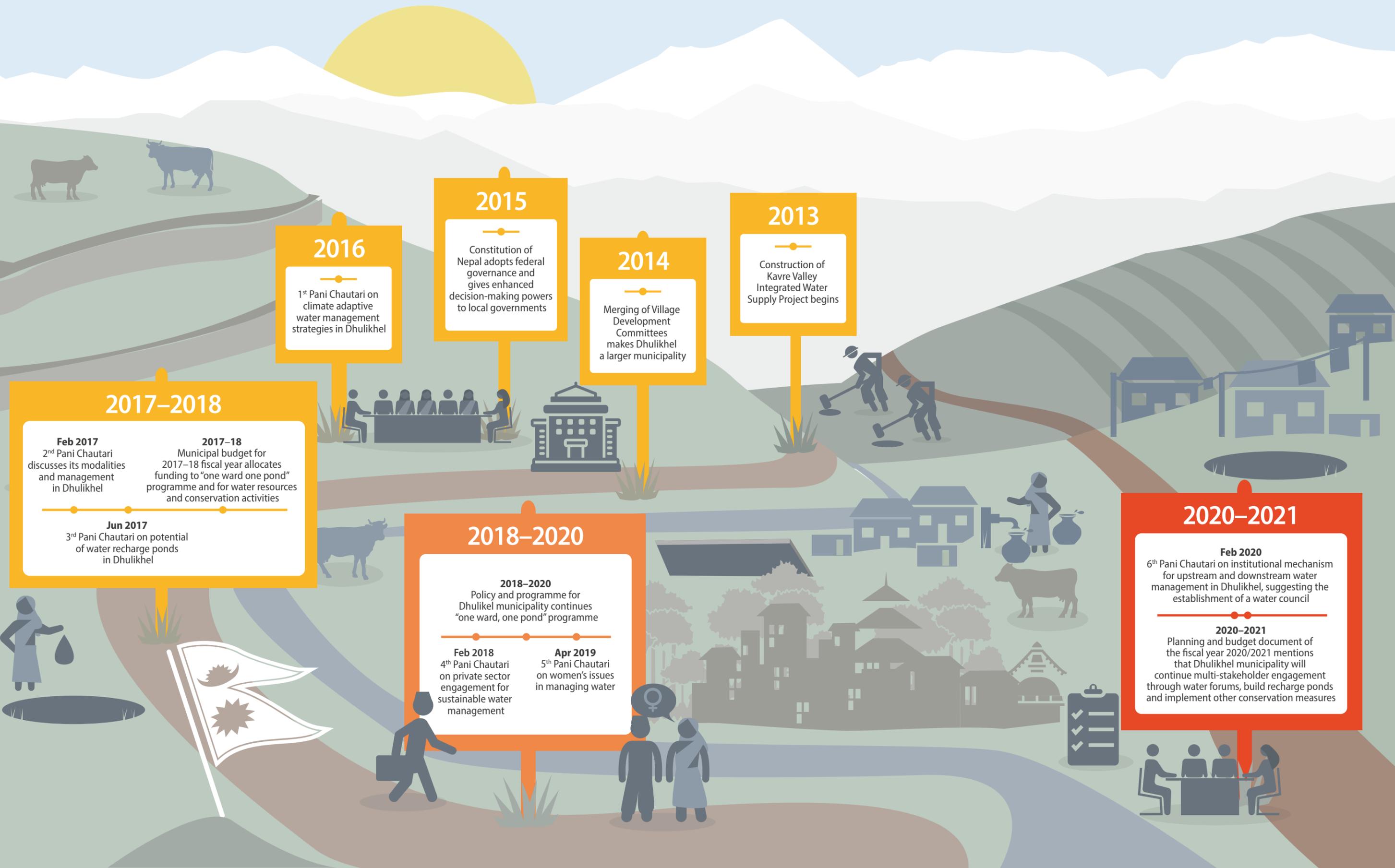
were translated into action, such as the piloting of recharge ponds and contour trenches to revive dry springs in the nearby forest in Dhulikhel.

- Identifying and appreciating local government's good practices and achievements instead of being critical of their activities, to encourage them to further expand effective actions. This included the municipality's decision to provide subsidies to users who installed rainwater harvesting systems, and hotels and industries who recycled and reused water.<sup>12</sup>
- Contributing technical and expert inputs on water management issues and strategic planning, including developing vision papers and promoting local innovation. Together, SIAS and the municipality also conducted various consultations and identified local solutions, such as protecting local water resources and city-specific innovative actions for enhancing groundwater recharge in upstream watershed areas, which were later incorporated in municipal policies.
- Organising site visits, such as joint visits to other projects, including to India, and accompanying stakeholders on these journeys. On these excursions, SIAS and municipal officials would informally discuss how research could contribute to the policy process, and how Dhulikhel could become an example of managing water through institutional solutions.

This long-term engagement thus ensured that the Dhulikhel municipality began to take greater interest in as well as ownership over the outcomes of the *Pani Chautari*. This culminated in the institutionalisation of water dialogues through the formation of a water council, which was proposed and adopted at the 6<sup>th</sup> *Pani Chautari* in February, 2020.

Figure 3.

# Timeline of events in Dhulikhel's journey towards water security





Participants at Dhulikhel's 6<sup>th</sup> *Pani Chautari* on institutional mechanism for upstream and downstream water management. © SIAS

Furthermore, thanks to the *Pani Chautari*, the municipality's appreciation of the use of science and evidence in policy-making significantly increased. For instance, through documenting the results of some of the pilots conducted by SIAS (such as the construction of recharge ponds to revive small springs outlined below), the municipality began to recognise the merits of field research and evidence to scale up these initiatives and inform policy.

The municipality also started investing its own resources in producing quality research and requested different studies to inform their decision-making.<sup>13</sup>

#### 4. Strengthening capacities through co-piloting and implementing solutions

*Pani Chautari* also contributed to strengthening the capacity of city-level water champions, forging better partnerships, and encouraging

innovations for sustainable and equitable water management, particularly through collectively identifying, piloting and implementing locally-appropriate solutions. Piloting of recharge ponds and trenches to augment spring water volumes and promote groundwater recharge in Dhulikhel, for example, helped to assess the effectiveness, cost, social acceptability and any unforeseen adverse effects of this proposed solution. In addition, piloting fostered



Field-level discussion to introduce the concept of a water recharge system in Dhulikhel. © SIAS

trust, collaboration and confidence in the solution itself, through a meticulous monitoring process.<sup>14</sup> The evidence generated (which showed that water volumes indeed rose) served to demonstrate the importance of upscaling the measure. Monthly data collected between April 2017 and May 2020 showed that the multiple recharge ponds and contour trenches that were constructed had gradually contributed towards increasing the volume of water in the local springs.

Ensuring that key institutions, such as the Dhulikhel municipality and Dhulikhel Drinking Water Supply and Sanitation Users Committee (DDWSUC), were involved in the discussions from the very beginning of the *Pani Chautari* process, provided the institutional support needed to carry out the

interventions. This support included helping to ensure the financing, construction and maintenance of recharge ponds. Furthermore, subsequent *Pani Chautari* workshops served as deliberative platforms to discuss the implemented measures, reflect on their level of success or shortcomings, and adjust these as required.

Because of the piloting phase of the recharge ponds and trenches, and as a result of the fruitful discussions on rainwater harvesting in the *Pani Chautari*, these measures have been included in municipal budget planning and institutionalised through the 'one ward, one pond' programme. These, and other innovations in water management (such as providing incentives for rainwater harvesting

and water recycling by commercial users, and the revival of traditional measures, such as the recovery of abandoned springs), have led to local and national leaders, as well as external agencies, recognising the worth of exploring alternative water sources. This is specifically helping to avoid the tensions created between upstream and downstream communities regarding sharing water resources within the Roshi River watershed.

## Challenges

Despite the successes outlined above, the harmonisation of Dhulikhel's efforts related to sustainable water management continues to be a challenge, as the views and opinions of key stakeholders (for example, government officials or industry



Piloting recharge pond in Dhulikhel initiated in collaboration with SIAS and Dhulikhel Municipality. © SIAS



Review and reflection meeting in Dhulikhel as part of *Pani Chautari*. © SIAS

representatives) vary according to their institutional or political affiliation. Their priorities may vary from appeasing a particular segment of the community through tax rebates, to allowing leniency in standards or prioritising access to water to more influential members of the community.

### *Maintaining a neutral space for discussion*

The *Pani Chautari* process has provided a neutral space for reflection grounded in data and evidence. It has also been able to integrate multiple types of knowledge and bring together scattered stakeholders who may hold contrasting views on water management issues. The researchers made it clear that they were not seeking or pushing any particular outcome, but rather aspired to bring all data and evidence to the table, and facilitate dialogue among stakeholders without taking sides. In practice, however, maintaining

neutrality was a challenging task, as the researchers had to tread carefully when it came to interrogating some of the more contested issues. As the researchers became more familiar with the problems Dhulikhel faced and the stakeholders themselves, remaining objective data providers proved to be increasingly difficult. To address this, the researchers regularly had internal post-event meetings to re-evaluate the discussions held in the *Pani Chautari* and identify how best they could continue adapting to the evolving situation.

### *Dealing with conflicting priorities*

Conflicting stakeholder interests and objectives had to be negotiated. The researchers' desire to test, analyse and document new innovative research and engagement methodologies tended to diverge from the priorities of local government leaders to urgently provide water, preferably through the physical development of infrastructural

solutions.<sup>15</sup> Research funders' requirements to limit stakeholder engagement and emphasise the production of peer-reviewed outputs clashed, at times, with the research team's aspiration to engage in-depth with the issues and stakeholders. Over time, the lessons from the SIAS groundwork revealed the need to rethink the classical way of separating research processes from stakeholder engagement. Instead, the co-creation of knowledge with stakeholders during different *Pani Chautari* events itself provided an opportunity to address existing conflicts by identifying alternatives to increase water security, including through dialogue and strengthening relationships.

### *Acknowledging and addressing power differentials*

In the early SIAS engagements with the different stakeholders in Dhulikhel, the researchers were met with significant distrust, conflicting interests and

defensive reactions. For example, the researchers' suggestion to revive abandoned springs to increase water supply was criticised by some town leaders, as this clashed with their idea of obtaining water from upstream.

To overcome the early discomfort and hesitation of women and other marginalised community members to participate in the group discussions and voice their opinions, the SIAS team organised individual meetings to build trust and encourage them to participate, in advance of the *Pani Chautari*. These encounters were followed by a couple of smaller discussions among key stakeholders with a limited number of participants

representing diverse sectors, like women's associations, water user committee members, marginalised sections, etc. These customised meetings were successful in building understanding and rapport with stakeholders and enabling them to participate in the larger *Pani Chautari* meetings.

#### *Maintaining stakeholder engagement over time*

Maintaining engagement in the process, given stakeholders' voluntary contribution of their time, was also a challenge. So, too, was keeping municipal authority participants engaged for the full length of an event,

given their busy schedules. This often affected the extent to which forward-looking decisions could be taken within the timeframe of the workshops. To overcome these challenges, robust documentation of *Pani Chautari* proceedings was prioritised, which was then shared with the stakeholders at a later date and their consent received through individual follow-up meetings. As already mentioned, several informal meetings and discussions with key stakeholders, including municipal authorities (such as deputy mayors), focused on the issues to be discussed in *Pani Chautari* or were conducted to formalise the ideas emerging in the forums.

### **Conclusion: Knowledge brokering as a contribution to robust water governance**

While Dhulikhel's first response to water scarcity had traditionally been to develop infrastructure engineering solutions, over the past five years there has been a growing realisation that these measures are costly, energy-intensive and often only bring short-term relief.<sup>16</sup> Through experiencing participatory processes and identifying alternative solutions, appreciation has increased for an alternative approach to the expert-dominated, top-down methods that have often resulted in limited engagement with local communities, and solutions that do not consider local needs and priorities.

The *Pani Chautari* process has provided a space for co-learning and sharing, thereby enhancing the knowledge and capacity of the local community to value and take charge of their water resources. Convening multiple sources of knowledge, coupled with well-constructed and moderated dialogues, has broadened stakeholders' view of issues and possible solutions. This has encouraged an appreciation of the need to move beyond administrative boundaries and consider water concerns more at the catchment level, as well as the importance of long-term thinking for the sustainability of water sources.

Furthermore, these dialogues have led to changes in policy and planning, and new stakeholders starting new initiatives. For instance, hotels and other private sector entities are collaborating with the municipality to conserve water through investing in different water efficient measures, with the support of government subsidies. SIAS's experience in this region has shown that even a slight improvement in the institutional mechanisms can strengthen governance and management processes without the need for extensive financial investments.

The *Pani Chautari* process conducted in Dhulikhel emphasised a cyclical approach to policy-making and encouraged a learning culture among stakeholders. It created an enabling environment for scientific evidence and stakeholder opinions to be heard and discussed in a constructive manner, as well as for solutions to be identified in consultation. As the true test for the success of these solutions lay in their cost and financing, pilot projects were co-financed and provided the opportunity to review and reflect on their success or shortcomings and make adjustments as required. This approach highlighted that co-learning and collaboration to identify feasible measures was a dynamic and iterative process that required long-term commitment from stakeholders to ensure its sustainability. The approach also brought about a positive change in the engagement and leadership role of women and socially marginalised groups.

As an outcome of the *Pani Chautari*, the SIAS team developed a toolkit<sup>17</sup> to document the process and methodology of the *Pani Chautari*, so that the model can be replicated by other municipalities facing similar concerns regarding equity and inclusion in their local water governance processes.

## Endnotes

- 1 These consist of a series of pipes that syphon water from upstream water bodies to lower ones.
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- 10 Shrestha, S., Devkota, K., Dahal, N. and Neupane, K. (2021). 'Application of recharge ponds for water management: Explaining from nature-based solution perspective'. In *Dhulikhel's journey towards water security: Insights for policy and practice* (pp 142-163). SIAS and Dhulikhel municipality.
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