# ASSAR
Adaptation at Scale in Semi-Arid Regions

# Using transformative scenario planning to think critically about the future of water security in Bangalore

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The five-year ASSAR project (Adaptation at Scale in Semi-Arid Regions, 2014-2018) uses insights from multi-scale, interdisciplinary work to inform and transform climate adaptation policy and practice in ways that promote the long-term wellbeing of the most vulnerable and those with the least agency.
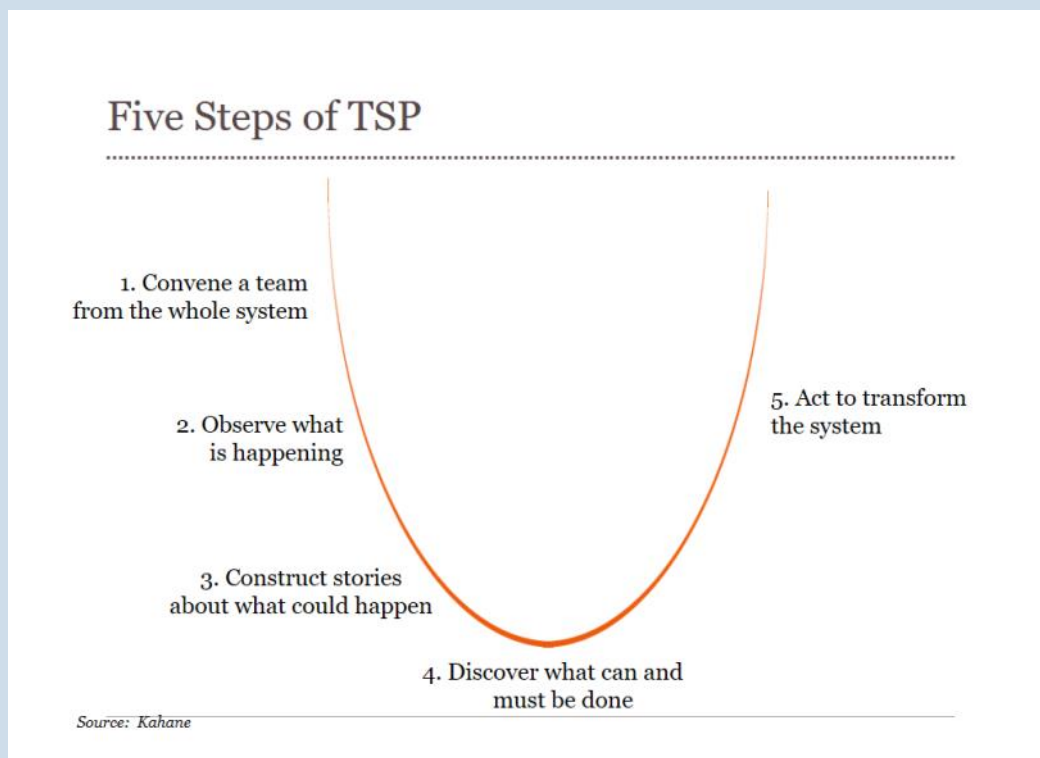
## KEY POINTS

- Over 60 stakeholders (government officials, NGO representatives, citizen action group members, entrepreneurs, journalists and members from the academia) participated in the Transformative Scenario Planning (TSP) process over the last 15 months, from October 2016 to December 2017.

- Following the five steps of the TSP process, the participants developed a 'Vision 2030' – a shared view of how water security can be improved – and identified key actions that need to be implemented to achieve this vision.

- Most participants agreed that there was value in such a collaborative effort such as TSP and, while they had the opportunity to interact with stakeholders with varied perspectives regarding Bangalore's water, they also learnt about a new methodology in the process.

- The TSP process has achieved varying levels of success across its five objectives among various participants. Some participants articulated a transformation in language and understanding of the water situation in Bangalore, while some other participants also managed to collaborate outside of the TSP process on various water issues – displaying a transformation in relationships, intention and actions.

## Introduction

Bangalore's water situation is in crisis. There are several issues plaguing the city: declining groundwater levels, supply shortages, pollution and contamination of water bodies, frequent flooding of low lying settlements, encroachment of lakebeds, and storm water drains. Projected climate change impacts, such as an increased frequency of extreme events, indicate elevated levels of water stress, thus posing a challenge to the sustainability and liveability of the city. Finding solutions to these complex problems is above and beyond the scope and capacity of any one agency. It necessitates the involvement of all concerned stakeholders.

Transformative Scenario Planning (TSP) offers a useful way forward in addressing such complex, stuck issues. Developed by Reos Partners, TSP is a participatory process that engages with multiple concerned stakeholders, to create a shared understanding of what is happening in their system and what actions the stakeholder can, must and will take to address them. Structured around the development and use of scenarios, it provides a framework and language for strategic conversations within and across stakeholder groups.

The Indian Institute for Human Settlements convened the TSP process on the issue of water security in Bangalore in a series of three workshops over a period of 15 months from October 2016, till December 2018. It successfully brought together more than 60 relevant stakeholders to discuss diverse perspectives, contribute to an empathetic and inclusive conversation and build a shared understanding of the current and future situation of water in the city.

The process concluded with the participants imagining a transformed future of water, what needs to be done in order to achieve that as well as them reflecting on their own individual roles in achieving that transformation.

# TSP training workshop

The first of the three workshops was a training workshop in October 2016, where stakeholders from government, civil society, private sector and academia met at the IIHS Bangalore City Campus. This workshop served two purposes:

- To determine if the situation on the ground is ripe for a TSP process, and
- To test if TSP is an appropriate tool to help us work through the stuck water situation in the city.

Held over two days, this training workshop was attended by 26 participants who not only learned the TSP methodology but also applied a fast-tracked version of the TSP to discuss the future of water in Bangalore. At the end of the two days, most participants felt that there was much value in bringing together very diverse water stakeholders for discussion, and that TSP would offer a useful forward in facilitating that. Hence this workshop laid the foundation for the actual, fully fledged TSP process that took place subsequently.



Five Steps of TSP

1. Convene a team from the whole system
2. Observe what is happening
3. Construct stories about what could happen
4. Discover what can and must be done
5. Act to transform the system

Source: Kahane



In a transformative scenario planning process, actors transform their problematic situation through transforming themselves, in four ways.

- First, the actors transform their **understandings.**
- Second, the actors transform their **relationships.**
- Third, the actors transform their **intentions.**
- Fourth, transformed understandings, relationships, and intentions among actors enable them to transform their **actions** and thereby to transform their situation.

There are three pre-requisite components for the above transformations to occur in a TSP process:

a. **whole-system team** of insightful, influential, and interested actors.
b. a **strong container** within which these actors can transform their understandings, relationships, and intentions.
c. a **rigorous process.**

*(Kahane, 2012)*

# TSP workshop #1

The first workshop of the actual TSP process was held from 19-20 July 2017 at the pristine environs of the United Theological College in Bangalore, and facilitated by Karen Goldberg of **Reos Partners**, and Sankar Subramanyam of **ChangeWorks**. The objective of the first workshop was to achieve the first three steps of the U-process: co-initiating, co-sensing and co-presencing.

## Step 1: Convene a team across the whole system

*"The first step in a transformative scenario planning project is to enrol a team of people from across a whole system who want to – and together are able to – influence the future of that system." (Kahane, 2012: 27).*

This workshop brought together a total of 26 stakeholders all concerned in one way or the other about the future of Bangalore's water. The group was made up of: municipal officials, community leaders, academic experts, NGO representatives, representatives of private organisations, artists, and entrepreneurs. Different participants brought in different concerns about water in the city with key concerns revolving around wastewater reuse, quality and quantity of groundwater, impacts of climate change, regional water resource management and allocation, governance of water resources, political will, citizen engagement for water conservation and pollution of water bodies. To enable multilingual participation, some people doubled up as translators to aid the ones not conversant in English. Participants expressed that they were willing to listen more and speak less in order to understand the different perspectives present in the room. They also agreed to 'park their cynicism', be open-minded and learn from one another during the workshop.

### Stakeholder questions

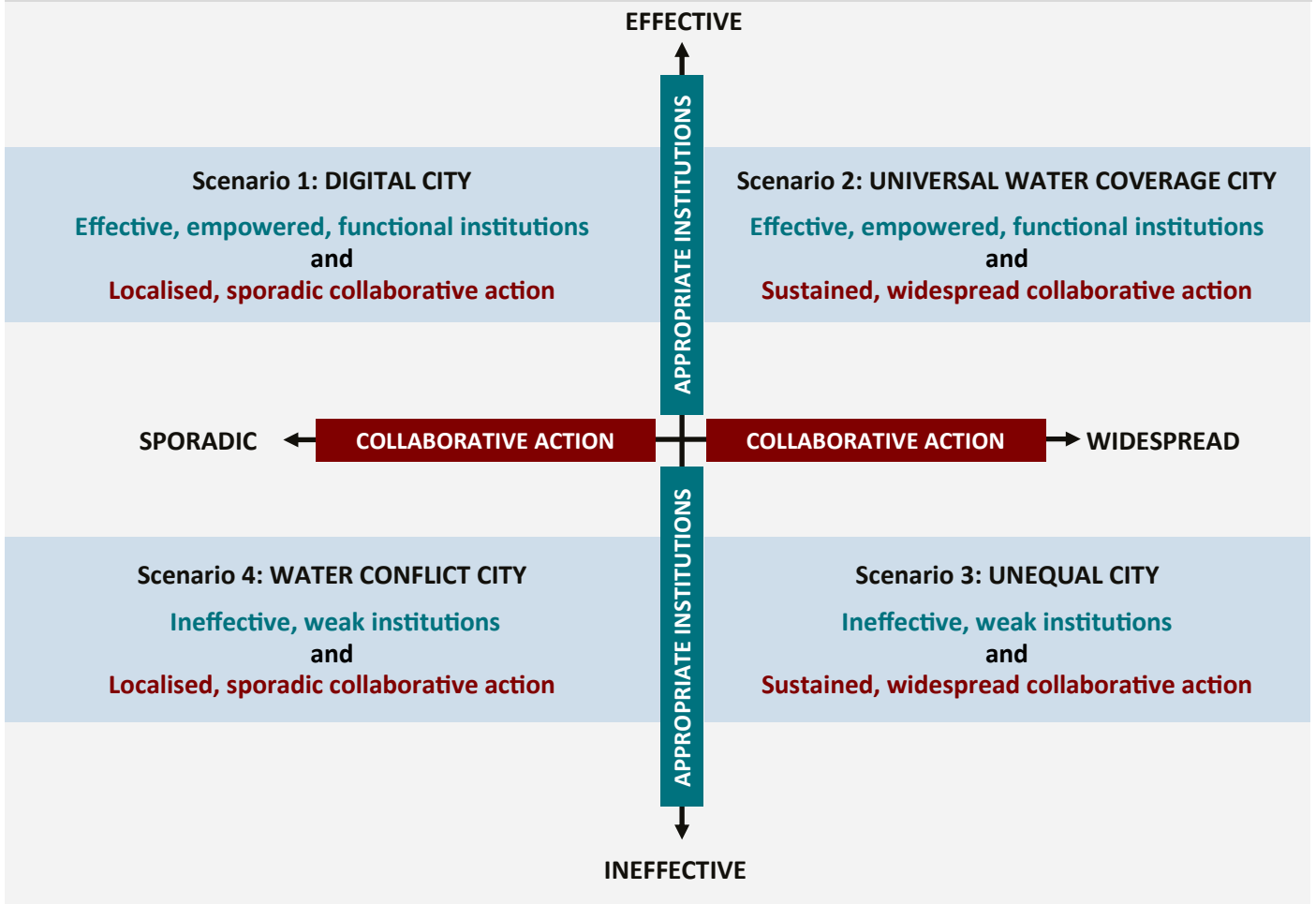| | |
|---|---|
| Will we be able to create the right institutions and frameworks for water governance? | With climate change in play, how are the major decisions convened around water security? |
| Will the Cauvery continue to flow in future? | Will the process of decision making involve a representation of all sections of the society or would it be hijacked by the elite? |
| How will the population come under control despite numerous efforts that are being taken? | How can we decrease groundwater abuse, given the fact that the number of bore-wells being dug is increasing exponentially? |

## Step 2: Observe what is happening

*"The second step of a transformative scenario planning project is for the scenario team to build up a rough shared understanding of what is happening in the system of which they are part and which they want to influence. It requires them to see not just their part of the system but more of the whole system. It requires them to open up and inquire and learn." (Kahane, 2012: 37)*

In a collective and collaborative exercise, participants used newspaper headlines to illustrate the different aspects of Bangalore's water systems, making associations with Social, Technological, Economic, Ecological and Political (STEEP) aspects of the system. Paired walks were used as an exercise to understand the concerns and questions the participants had about the future of water in their city. In an iterative process, more than 35 drivers were identified by the participants, which were broadly clustered as: impacts of climate change, social vulnerabilities, water allocation and access, depletion of natural resources, civic involvement, and governance. A voting process helped narrow down the list to five concerns of greatest importance for the participants. Following much debate and discussion, the group decided on two overarching driving forces, namely: 'appropriate institutions' (that are either effective, empowered and functional or the opposite) and 'collaborative action' (that is either sustained and widespread or the opposite). These two driving forces formed the axes for the future scenario construction.

## The future of water security in Bangalore

**EFFECTIVE**

APPROPRIATE INSTITUTIONS

**Scenario 1: DIGITAL CITY**

Effective, empowered, functional institutions
and
Localised, sporadic collaborative action

**Scenario 2: UNIVERSAL WATER COVERAGE CITY**

Effective, empowered, functional institutions
and
Sustained, widespread collaborative action

SPORADIC ← COLLABORATIVE ACTION     COLLABORATIVE ACTION → WIDESPREAD

APPROPRIATE INSTITUTIONS

**Scenario 4: WATER CONFLICT CITY**

Ineffective, weak institutions
and
Localised, sporadic collaborative action

**Scenario 3: UNEQUAL CITY**

Ineffective, weak institutions
and
Sustained, widespread collaborative action

**INEFFECTIVE**
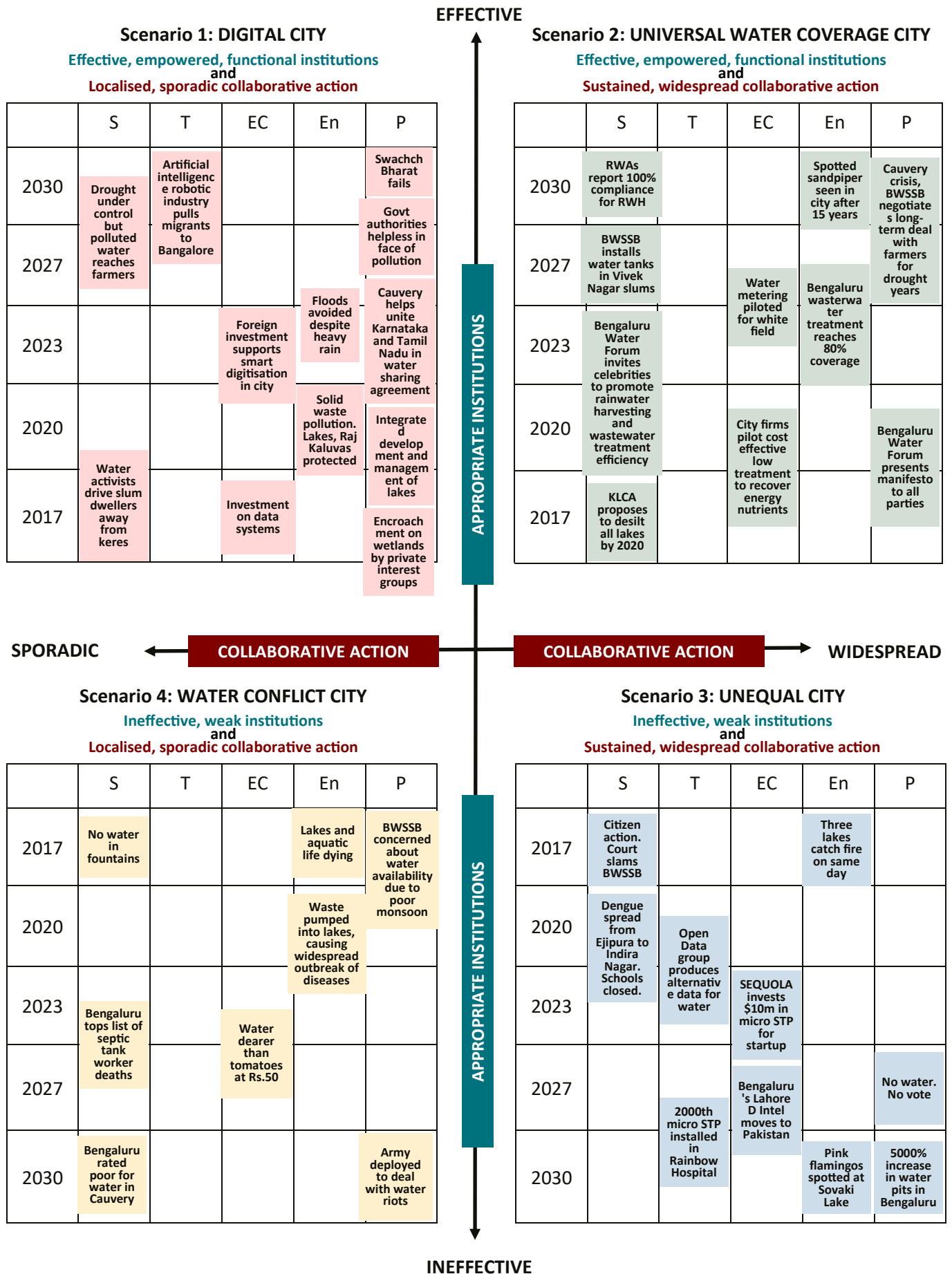
# Step 3: Construct stories about what could happen

*"The third step in the transformative scenario planning project is for the team to construct a useful set of scenarios about what could happen in and around their system. To be useful, the scenarios must be relevant, challenging, plausible, and clear. Useful scenarios open up and enable movement in the thinking and acting of actors across the system."*
*(Kahane, 2012: 51)*

The stakeholders were divided into four groups to start building the scenarios iteratively based on the interactions of the driving forces placed on the two axes (see above). Using creative ways such as LEGO building blocks they imagined what the future of Bangalore would look like in relation to its water by 2030, and the steps and events that would unfold starting from now into the future, in order to get to that end state. At every step the participants were urged to build scenarios that were challenging, plausible and relevant in the context of Bangalore and its present condition. After integrating the feedback from the participants into their scenario, each group presented their story to the plenary in the form of a skit.

# Timeline of events for scenario building, using the STEEP analysis:

## Social, Technological, Economical, Environmental, and Political

**EFFECTIVE**

### Scenario 1: DIGITAL CITY
**Effective, empowered, functional institutions**
**and**
**Localised, sporadic collaborative action**

| | S | T | EC | En | P |
|---|---|---|---|---|---|
| 2030 | Drought under control but polluted water reaches farmers | Artificial intelligence robotic industry pulls migrants to Bangalore | | | Swachch Bharat fails |
| 2027 | | | | | Govt authorities helpless in face of pollution |
| 2023 | | | Foreign investment supports smart digitisation in city | Floods avoided despite heavy rain | Cauvery helps unite Karnataka and Tamil Nadu in water sharing agreement |
| 2020 | | | | Solid waste pollution. Lakes, Raj Kaluvas protected | Integrated development and management of lakes |
| 2017 | Water activists drive slum dwellers away from keres | | Investment on data systems | | Encroachment on wetlands by private interest groups |

### Scenario 2: UNIVERSAL WATER COVERAGE CITY
**Effective, empowered, functional institutions**
**and**
**Sustained, widespread collaborative action**

| | S | T | EC | En | P |
|---|---|---|---|---|---|
| 2030 | RWAs report 100% compliance for RWH | | | Spotted sandpiper seen in city after 15 years | Cauvery crisis, BWSSB negotiates long-term deal with farmers for drought years |
| 2027 | BWSSB installs water tanks in Vivek Nagar slums | | Water metering piloted for white field | Bengaluru wasterwater treatment reaches 80% coverage | |
| 2023 | Bengaluru Water Forum invites celebrities to promote rainwater harvesting and wastewater treatment efficiency | | | | |
| 2020 | | | City firms pilot cost effective low treatment to recover energy nutrients | | Bengaluru Water Forum presents manifesto to all parties |
| 2017 | KLCA proposes to desilt all lakes by 2020 | | | | |

**APPROPRIATE INSTITUTIONS**

**SPORADIC** ← **COLLABORATIVE ACTION**      **COLLABORATIVE ACTION** → **WIDESPREAD**

### Scenario 4: WATER CONFLICT CITY
**Ineffective, weak institutions**
**and**
**Localised, sporadic collaborative action**

| | S | T | EC | En | P |
|---|---|---|---|---|---|
| 2017 | No water in fountains | | | Lakes and aquatic life dying | BWSSB concerned about water availability due to poor monsoon |
| 2020 | | | | Waste pumped into lakes, causing widespread outbreak of diseases | |
| 2023 | Bengaluru tops list of septic tank worker deaths | | Water dearer than tomatoes at Rs.50 | | |
| 2027 | | | | | |
| 2030 | Bengaluru rated poor for water in Cauvery | | | | Army deployed to deal with water riots |

### Scenario 3: UNEQUAL CITY
**Ineffective, weak institutions**
**and**
**Sustained, widespread collaborative action**

| | S | T | EC | En | P |
|---|---|---|---|---|---|
| 2017 | Citizen action. Court slams BWSSB | | | Three lakes catch fire on same day | |
| 2020 | Dengue spread from Ejipura to Indira Nagar. Schools closed. | Open Data group produces alternative data for water | | | |
| 2023 | | | SEQUOLA invests $10m in micro STP for startup | | |
| 2027 | | | Bengaluru's Lahore D Intel moves to Pakistan | | No water. No vote |
| 2030 | | 2000th micro STP installed in Rainbow Hospital | | Pink flamingos spotted at Sovaki Lake | 5000% increase in water pits in Bengaluru |

**APPROPRIATE INSTITUTIONS**

**INEFFECTIVE**

In the next four months, between the first and the second workshop, the scenarios that were presented by the four teams were collated and refined by scenarios team comprising of members from the convening team as well as few external stakeholders. The stories were worked upon to especially ensure that they were relevant, challenging, clear and plausible. Taking cues from all the exercises especially in STEP 3, the scenarios team refined the stories constructed during this workshop. These stories served as the foundation for strategic planning in the second workshop with the aim of identifying how to adapt to, and potentially transform, the future, in relation to Bangalore's water security.

# TSP workshop #2: Implications

The second TSP workshop was held at the Indian Institute for Human Settlements – Bangalore City Campus, on 5-6 December 2017, and aimed to advance into the last two steps of the U-process of transformation: co-creating and co-evolving. The key objectives of the workshop included:

- To build capacity for longer term collaboration
- To get a better understanding of what the group sees as a desired future
- To clarify what can, and must be done, together
- To lay the groundwork for response strategies

This workshop was facilitated once again by Karen Goldberg of Reos Partners, and Sankar Subramanyam of ChangeWorks, and attended by over 24 stakeholders, many of whom were part of the previous workshops, as well as a few new participants.

## Step 4: Discover what can and must be done

*"The fourth step of a transformative scenario planning project is for the team to see what their scenarios tell them about what they can and must do. These conclusions may be about actions that they need to take to adapt to things they cannot influence, or about actions to influence things they can. These conclusions may be about actions that they need to take jointly or separately. In this step, the team crystallizes their intentions." (Kahane, 2012: 61)*

A series of exercises was used to unpack this step, which helped share the final scenarios with the participants, and co-create a vision for water security in Bangalore by 2030.

### Exercise 1: Sharing the scenarios

After a brief recap of the first workshop, the scenario development team explained that the scenarios were developed in an iterative manner. The narratives were built by taking cues from the headlines across the STEEP realms, looking at what would happen during a period of time, in order to reach an end state that is plausible. The four scenarios were narrated to the participants, after which the stakeholders were asked to critically evaluate the scenarios by listing down the threats, opportunities, positive and negative signals. The scenarios were essentially used as prompts for the participants to imagine what different futures might look like. It pushed the stakeholders to imagine their own roles in each of the futures that were being narrated, and what they must do or not do to achieve or avoid certain futures. The stakeholders appreciated how the scenarios unfolded, even while disagreeing with some of the nuances within each scenario. However, they all agreed that it was not enough to merely adapt to the situation but that 'transformation' was the need of the hour.

**Stakeholders reflecting on the scenarios**

| | | |
|---|---|---|
| Despite the existing collaborative action, it is quite challenging to rule out 'exclusion'. The bipolar nature of community will continue to exist in the form of marginalised and most powerful communities. | Scenario 4 is quite similar to what's happening now, however there is too much of an emphasis on collaborative action. | We are missing the 'how we came out of the scenario' state. I feel collaborative action is not enough. |
| Politicisation of 'the forum' is a concern in scenario 3. Is it possible to have community action forever? | Bangalore is not all that bad. There are other places that are worse. We are actually beginning to cope to the changing scenarios. These are good scenarios, but how do we define that trigger moment from chaos? How do we enter the room fully? | There are a lot of negative factors, but that does not undermine the emerging silver linings. |
| There will be a few winners and losers. Where are they in the stories? | | |

## Scenario 1: DIGITAL CITY

Institutions become resilient, using the technological and financial strengths of an IT city, but collaborative action remains sporadic as labour migration is high, leaving unskilled workers in informal settlements the most vulnerable.

### THREATS

- State can't address problems.
- Recession in IT sector.
- Spatial manifestation of inequalities.
- Equal and consistent access to water.

### OPPORTUNITIES

- Use of technology to manage water.
- Use of CSR and investments to improve water quality and security.
- Strong policies, institutions and PPPs that govern the resource.
- Better awareness and behavioural change among citizens.

## Scenario 2: UNIVERSAL WATER COVERAGE CITY

Universal coverage for provision of water and coordination between institutions, private actors and the public lead to better governance and management of water resources.

### THREATS

- Increased migration and demands.
- Strain of collaboration between citizens and industry.
- Elite capture of resources and power.
- Climate variability, deteriorating quality of water resources, increase in population.
- Lack of diversification in solutions.

### OPPORTUNITIES

- Financial support for water resource rejuvenation from private players.
- Enhanced climate addressing system, up to a micro scale.
- Robust institutions and policies that ensure better implementation and governance of water resources.
- Enhanced capacities of the citizens to use the resources efficiently.

## Scenario 3: UNEQUAL CITY

Environmental litigation rises with citizen participation to counter unaccountable institutions, but fails to improve governance, leading to possibilities of coordination relegated to private corporations and citizen collectives in the form of public-private partnerships.

### THREATS

- Poor accountability
- Weak institutions with insufficient manpower to manage resources
- Elite capture of power and resources.
- Increased socio-economic divide amid citizens.
- Ineffectiveness of sporadic action.

### OPPORTUNITIES

- Citizens have a greater take on policy making.
- Better institutional governance and impact.
- Enhances preservation of environmental services.

## Scenario 4: WATER CONFLICT CITY

Sporadic citizen action and unfavourable institutions end up increasing inequality, eventually resulting in an increase in water conflicts in the city.

### THREATS

- Increased outmigration of citizens.
- Basic livelihood of citizens under threat.
- Increased crime rate.
- Improper management of waste.

### OPPORTUNITIES

- Enhanced multi-lateral funding.
- Rising of new innovations and start-ups to fill in livelihood gaps.
- Novel opportunities for political leadership.
- Better scope for revolution and renewal of water resources.
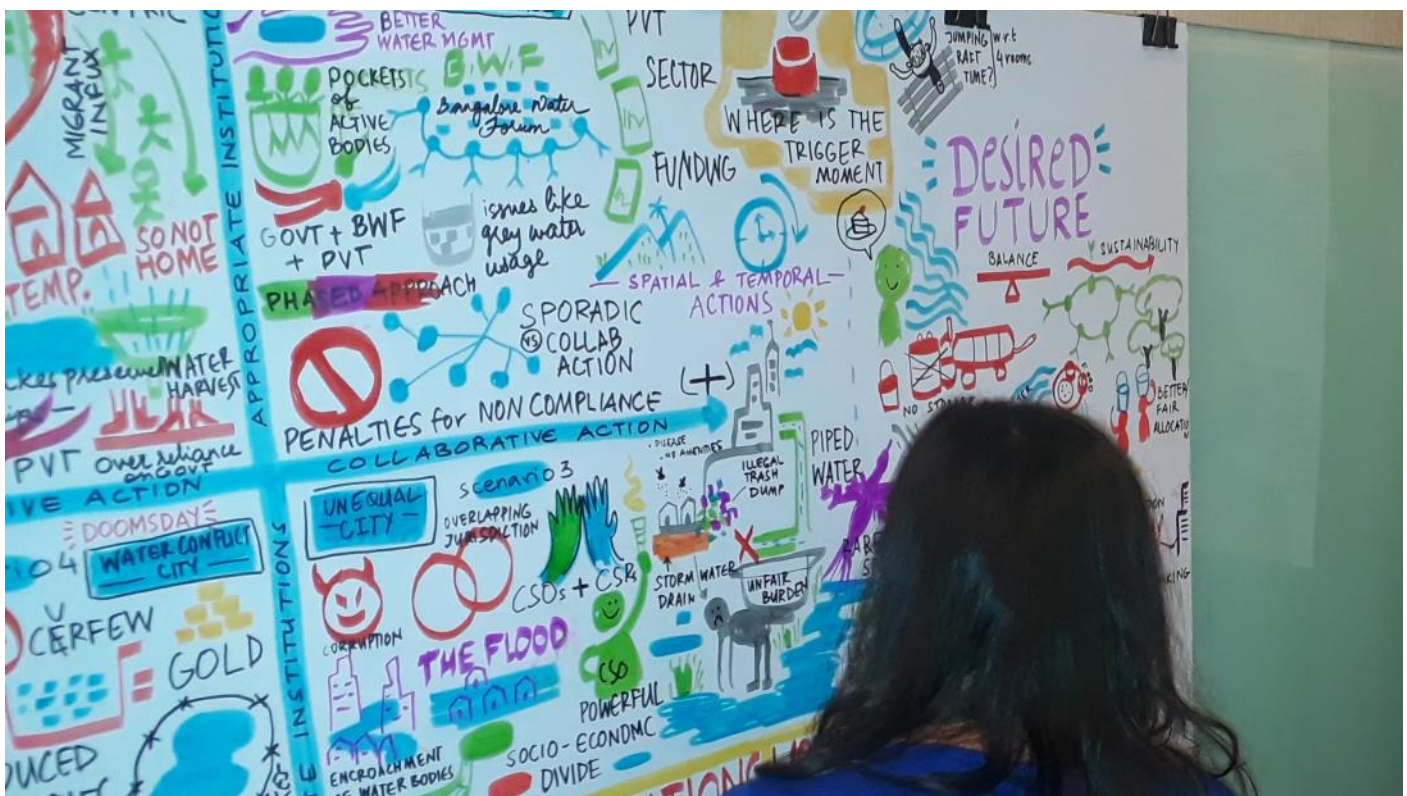


An artist from **LadyFingers Co.** made a graphic recording of the TSP scenario discussions.

## Exercise 2: Vision 2030

This exercise was aimed at articulating what the stakeholders held as their vision for the future of the city by 2030. The stakeholders were asked to draw a picture of their desired future of the city with as much detail as possible and then share the same with the rest of the participants.

This exercise was quite reflective in nature and also built on the previous sessions, drawing insights from the various exercises, and discussions that were held among stakeholders. It was quite spectacular to see the same city being envisioned through diverse, hopeful and creative lens. Although the topic was about water security, the desired future for the city extended much beyond the aspects of water alone.



**Vision 2030: A selection of drawings by workshop participants**
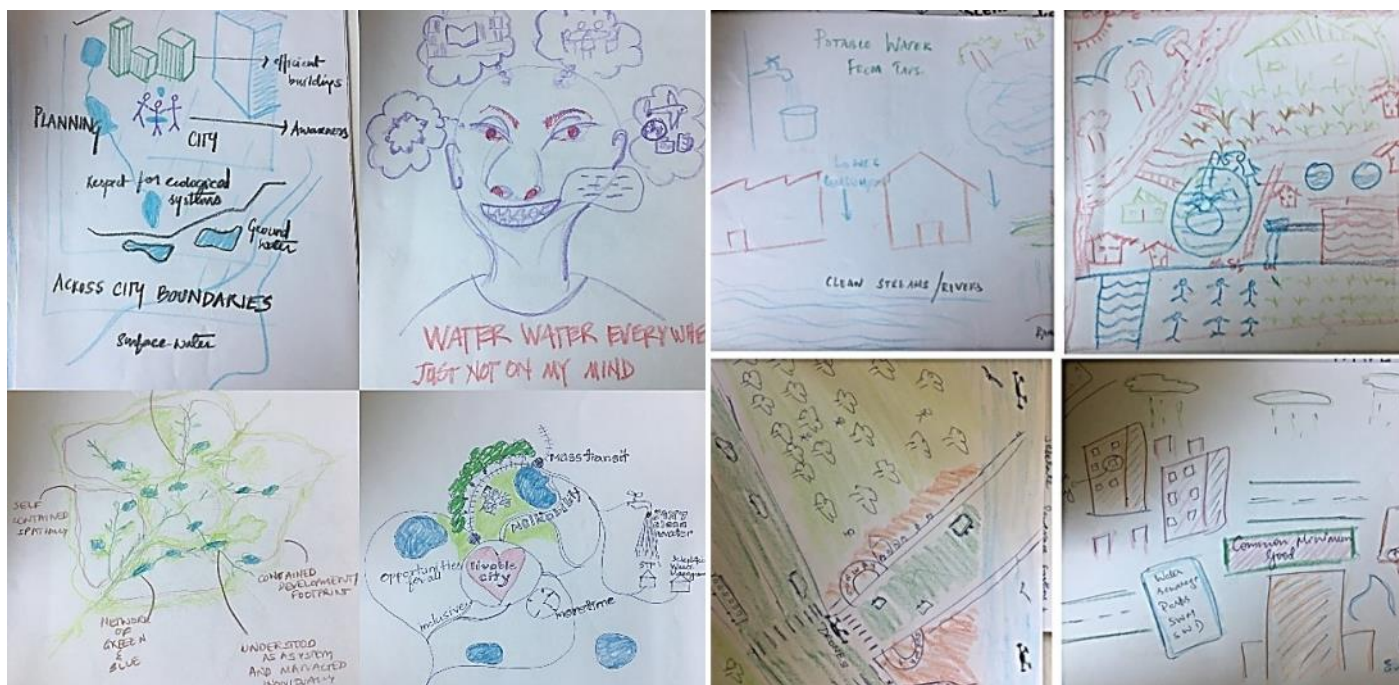
# Step 5:  Act to transform the system

*"In the fifth and final step of a transformative scenario planning project, the members of the team act, with one another and with others from across the system, to transform the problematic situation. These actions can take any number of forms: campaigns, meetings, movements, publications, projects, initiatives, institutions, or legislation; private or public; short-term or long-term. The activities of this step, more than those of the previous steps, will therefore generally not be able to be foreseen or planned in advance. These activities will furthermore not necessarily be organized by or seen as part of the scenario project as such." (Kahane, 2012: 69)*

By now, we attempted to bring together the whole team of actors concerning the water system in Bangalore, constructed scenarios about what could happen within the water sector, and reflected on what we could possibly do to deal with the opportunities and challenges posed by these scenarios. In this last step of the TSP process, the participants were asked to think about what concrete action they would like to take, individually or collectively, in order to achieve the future of water and the city they desired and articulated in Vision 2030.  Upon discussing the ideas in plenary, it became obvious that there were themes or categories of action that the stakeholders were interested in working on. So all the participants divided themselves into groups, based on the themes of action that interested them and conceptualised preliminary ideas for concrete actions that could be instrumental in achieving Vision 2030.

The following is a list of the themes and their actionable items:

### Mindset change

- Democratise knowledge in order to connect the ecologies of knowledge and bring about a long-term change in attitude and behaviour.
- Design a platform to bring in the right kind of people to bring this change.
- Ensure equal access to space for all individuals.

### Lakes

- Action around lake protection to be backed by scientific evidence.
- Encourage citizen action groups to collaborate in lake protection and tree plantations around the lake eco-systems.
- Enhance awareness among citizens about the importance of lake conservation.

### Action areas

### Systems thinking

- Ensure a wider outreach across all cadres of society to bring about change, through sensationalisation and dramatisation.
- Use social media platforms for a wider outreach.

### Targeted change

- Involve multiple stakeholders to implement adaptive measures.
- Ensure a unified system of functionality and management of water resources in the city, which otherwise is discrete and disconnected.

**Action areas with concrete activities**

As a step forward in this exercise, the participants were asked to make a list of all the counter-productive activities/ programmes and procedures that were currently being done, that could potentially derail them from achieving their objectives and desired future. The aim of this step was to identify all the things that one would need to stop doing, in order to achieve their targets. What became clear through this step was that there are several practices and procedures currently in place that hinder us from achieving the future we want to see. Many of these practices have been present for a long time and embedded structurally in the way society works. In order to bring about a change, we must recognise these practices and transform them through our thoughts and actions.

The TSP Implications Workshop ended with four groups presenting to plenary the action areas that they were interested in working on, and strategies to operationalise them. The Indian Institute for Human Settlements (IIHS) as the convening organisation concluded the workshop by speaking about what it could do as an institution to support some of these action areas. To start with, IIHS committed itself to fostering the new networks that were built during the workshops, and providing a common platform for the discussion and communication of solutions for Bangalore's water security.

# Six considerations in achieving the desired future

| Avoid exclusive language | Continue to do what you are doing |
|---|---|
| Many rural communities cannot understand research language. | Any small action is significant. Quality is important, not quantity. |
| **Avoid technology exclusion** | **Stop procrastinating** |
| Rural areas don't have access to technological innovation despite being entitled to them. | Most impacts of climate change could have been avoided if only timely measures were taken. |
| **Use time efficiently** | **Be innovative** |
| Many times we tend to sit back and wait for a catastrophe to strike. | Stop using boring forms of communication. |

# Conclusion

The TSP workshops presented an opportunity to bring together a diverse set of stakeholders in Bangalore to discuss and reflect on the future of the city's water. The process, through its several facilitated steps and exercises, was appreciated by the participants – all stakeholders of the water system, and influencers in their own right. The possibility of bringing together the diversity of actors within the water sector was deemed as a valuable contribution of the process. It was felt that more opportunities must be made available for such interactions where different actors with various perspectives, working at different scales of the water system, can be brought together, and the future can be imagined through multiple lenses in a holistic way.

The objectives of a TSP process are the transformation of understanding, relationships, intentions and actions among the participants. Different objectives were met to varying degrees through these 18 months of the process. Some participants forged relationships with one another that go beyond the boundaries of a TSP process and have initiated various actions related to the water system, jointly or individually. Some participants articulated that the workshops helped broaden their understanding of the water system in the city, and that they now appreciate several nuances of the system they had previously ignored or were unaware of.

TSP is a long process of sustained engagement with an extensive investment of time and thought on the part of the stakeholders. **We would like to thank all the stakeholders for their interest, participation and involvement in the process.**

# Feedback from the stakeholders

"I had the opportunity to hear out to everyone's ideas and approaches, which helped me modify my own way of thinking. TSP workshop helped me understand the importance of building relations and community participation for solving problems."

"TSP is a process. You have step 1, step 2, step 3. If you make a step clearly, understand the latent issues; why these issues persist and then tell everyone to open up, you'll actually get detailed understanding about the issue. To add on, the more you have a diversity, the more ideas you have in the room, but unless you ask for it, you would not get it. And this exactly what TSP facilitated in."

"While working for the government I have always seen that public participation into the administration level is minimal and sometimes negligible. So I attempt to work more as a researcher which includes implementing on ground. The TSP workshop is a very good platform to bridge this gap of public participation. It really helped me get into a lot, a lot of things which can formulate a strong framework for the solution."

## Participants of the first TSP workshop



**Back row (from left):** Greeshma Hegde, Mohan Zade, Adithya Pradhyumna, Harpreet Kaur, Harish, Varun Panicker, Veena Srinivasan, Marcella D'Souza, Santosh Raghavan, Nikhil Jain, Harshwardhan, Krishna Balakrishna, Eshwar Kale, Sundar M Senthilnathan **Middle row (from right):** Hemant Pinjan, Prathigna Poonacha, Manjula, Latha Narsimhamurthy, Smitha N, Geetika Anand, Shalini Iyengar, Soundarya Iyer, Maitreyi Koduganti **Front row (from left):** Rithwika Basu, Anuttama Dasgupta, Pooja D'Souza, Kumaramma, Teresa Parez, Simar Kohli, Garima Jain, Shobha Reddy, Sankar Subramanyam , M B Krishna, Rajesh Shah **Missing:** Karen Goldsberg

**Participants of the second TSP workshop**

**Back Row (From left)**: Sundar Senthilnathan, Varun Panicker, S Vishwanath, Krishna Balakrishna **Middle Row (From Left)** Birgit Ottermann, Rajesh Shah, Pooja D'Souza, Eshwar Kale, Harpreet Kaur, Tanvee Nabar, Harish R, Nikhil Jain, Hemant Pinjan, Vikas Joshi, Sudhir Desai, Teresa Perez **Front Row: (From Right):** M B Krishna, Ritwika Basu, Nirupama Rao, Soundarya Iyer, Maitreyi Koduganti, Amir Bazaz, Karen Goldberg, Sankar Subramanian, Smitha N, Manjula, Kumaramma, Anuttama Dasgupta, Shubha Avinash , Prathigna Poonacha, Greeshma Hegde.

# ABOUT ASSAR

ASSAR uses insights from multiple-scale, interdisciplinary work to improve the understanding of the barriers, enablers and limits to effective, sustained and widespread climate change adaptation out to the 2030s. Working in seven countries in Africa and South Asia, ASSAR's regional teams research socio-ecological dynamics relating to livelihood transitions, and the access, use and management of land and water. One of four consortia under the Collaborative Adaptation Research Initiative in Africa and Asia (CARIAA), ASSAR generates new knowledge of climate change hotspots to influence policy and practice and to change the way researchers and practitioners interact.

For more information: ASSAR - www.assar.uct.ac.za or email Prathigna Poonacha - ppoonacha@iihs.ac.in
TSP - www.reospartners.com

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