

Behavioral Dynamics In Rainwater Harvesting Adoption: A Survey Of Bengaluru Residents

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ABSTRACT

Bengaluru, one of India's fastest-growing urban centers, faces increasing water stress despite significant rainfall potential, highlighting the need for decentralized solutions such as rainwater harvesting (RWH). This study examines the behavioral dynamics influencing the acceptance, adoption, and sustained use of RWH among urban residents. Using a cross-sectional survey (N = 55), the study applies descriptive, correlational, and inferential analyses—including reliability testing, logistic regression, and factor analysis—to identify key drivers of adoption.

The findings reveal a pronounced intention–action gap, with high levels of awareness and willingness (94%) contrasting sharply with low actual adoption (11%). Logistic regression indicates that awareness significantly increases the likelihood of adoption, while cost concerns act as a major deterrent. Perceived water scarcity shows only a moderate influence, suggesting that the absence of immediate crisis reduces behavioral urgency. Factor analysis identifies three underlying dimensions—economic–awareness, policy orientation, and sustainability—indicating fragmentation in decision-making processes.

The results underscore that water conservation behavior is shaped not only by knowledge but also by cognitive, social, and economic factors, including risk perception, social norms, and financial constraints. The study concludes that effective RWH adoption requires integrated interventions that enhance perceived urgency, strengthen individual agency, and align policy enforcement with behavioral strategies. These findings contribute to the growing literature on urban sustainability by offering a behavioral framework for improving decentralized water management in rapidly urbanizing contexts..

KEYWORDS: Water Stress, Rainwater Harvesting, Water Conservation, Sustainability, Behavioural Urgency, Social Norms.

INTRODUCTION

Bengaluru's rapid urbanization drives groundwater depletion exceeding 1.5 m annually, classifying East Bengaluru as "overexploited" at 161% development stage (Central Ground Water Board [CGWB], 2020). Despite receiving about 1,000 mm of annual rainfall, nearly 90% runs off unused. If even 50% were harvested, it could yield 10–15 TMC (Ramesh, 2023; Bengaluru Water Supply and Sewerage Board [BWSSB], 2023), with BWSSB supplying 1,450 MLD against 2,100 MLD demand and only 17% (1.8 lakh of 10.6 lakh connections) adopting rainwater harvesting (RWH), while 43,000 households pay penalties, ignoring the mandates.

RWH recharges aquifers and reduces municipal dependence (Singh et al., 2022), but technical feasibility (e.g., 50,000 L/year from 100 m² rooftops; Campisano et al., 2017) overlooks behavioral barriers (Nandi et al., 2022). Social norms explain 30–50% adoption variance (Cialdini, 2003; Ferraro & Price, 2013), while cognitive processes—Right Lateral Prefrontal Cortex (RLPFC) for impulse control, Temporo-Parietal Junction (TPJ) for empathy (Brosch et al., 2012; Moll et al., 2006), hippocampus for habits, reveal Bengaluru's intent-action gap (desire to install versus actual installation and in turn deny scarcity)...

Policy mandates (BWSSB Act, 2009; Karnataka Groundwater Act, 2011) falter on enforcement (Raju & Chatterjee, 2019), despite community self-maintenance preferences (Beirne et al., 2022; Adams et al., 2013). A key gap is that existing literature treats technical, policy, and behavioral insights separately. This study integrates these perspectives using Bengaluru-specific data (Biswas & Tortajada, 2018; Hebbar et al., 2001).

Objectives

This study aims to identify the key factors influencing acceptance of rainwater harvesting (RWH), examine barriers to its installation, and assess the level of policy awareness among residents. It also seeks to analyze the determinants of sustained use to better understand long-term adoption behavior.

LITERATURE REVIEW

Rapid urbanization and increasing water demand have intensified water stress in cities worldwide, particularly in rapidly growing regions such as Bengaluru. Despite adequate annual rainfall, inefficient capture and management result in significant water loss, highlighting the importance of decentralized solutions such as rainwater harvesting (RWH) (Campisano et al., 2017; Biswas & Tortajada, 2018). RWH has been widely recognized as an effective strategy for augmenting water supply, recharging groundwater, and reducing dependence on centralized systems (Singh et al., 2022). However, its success depends not only on technical feasibility but also on social acceptance and sustained behavioral engagement (Nandi et al., 2022).

METHODOLOGY

This study employed a cross-sectional survey design to examine the behavioral dynamics influencing the adoption of rainwater harvesting (RWH) among residents of Bengaluru. Data were collected through an online questionnaire administered to a sample of 55 participants, primarily independent household residents. The instrument included both structured and Likert-scale items designed to capture four key constructs: perceptions and attitudes, barriers, policy and governance, and sustainability orientation.

Descriptive statistics were used to summarize demographic characteristics and response patterns. Reliability of the measurement constructs was assessed using Cronbach's alpha. Inferential analyses included correlation analysis to examine relationships among variables and logistic regression to identify predictors of RWH adoption. Additionally, exploratory factor analysis was conducted to identify underlying dimensions of behavioral responses, and cluster analysis was used to segment respondents based on adoption patterns.

This mixed analytical approach enabled a comprehensive understanding of both the individual and structural factors influencing RWH acceptance, installation, and sustained use.

RESULTS

Thematic analysis of an online random survey of 55 responses revealed patterns across four variables:

1. Perceptions/Attitudes (PA)
2. Barriers (B)
3. Policy/Governance (PG)
4. Sustainability (S)

Respondent demographics included 63% women, ages 18-92 years, high education levels (postgraduates, engineers), 50% in independent houses, and 33% using municipal water. Analysis of 55 valid responses shows high environmental intent (94%) but low adoption (11%).

Perceptions and Attitudes (PA)

Shortage severity $M = 2.1$ ($SD = 1.2$); 59% rated low. RWH awareness = 94%; willingness = 94% ($M = 4.7/5$); current adoption = 11%. A majority (59.3%) reported no local water shortage. Tanker purchases were infrequent: 87% never or rarely, 10% every 15 days, with one apartment resident citing daily needs. Water was viewed as essential by 90.7%, culturally significant by 37%. RWH adoption stood at 11% (recharging groundwater), with 94.4% expressing support due to environmental concerns; 18.5% saw no alternatives, 3.7% uncertain. Mean shortage severity: 2.1/5 (low; 59% "not severe"). Tanker use: 87% never/rare. Water connection: 91% "basic necessity." RWH awareness: 94% yes (how: demos/media/policy). Implementation: 94% yes (already 11%; reasons: recharge/reuse). Alternatives: Lakes/trees (minor).

Barriers (B)

Problem-solving potential $M = 4.2$ ($SD = 0.9$). Reuse: Domestic 44%, recharge 26%. Funding: Government 37%. Maintenance: Self 46%, ≤ 1 hr/mo 67%. Awareness was moderate: 61.1% understood RWH, 14% limited knowledge; 42.6%

believed storage/reuse solves issues. Reuse willingness: 44.4% domestic (filtered tanks), 13% groundwater recharge, 13% irrigation/toilet. Maintenance commitment: 66.7% ≤1 hr/month, 16.7% >4 hr/month. Economic preferences: 37% government funding, 25% community; 46.2% self-maintain, 13% government. Social views: 29.6% no health risks, 18.5% risks, 88.9% no known illnesses. Awareness/use: 61% know how. Solve problems: Mean 4.2/5. Reuse preference: 44% domestic, 26% recharge/irrigation. Funding: 37% govt, 25% community. Maintenance: 46% self, 66% ≤1hr/month. Health risks: 30% no, 89% no illnesses.

Policy and Governance (PG)

Mandatory support = 78%; enforcement = 70% (M = 4.1/5). Strong support for mandates: 77.8% require storage/use, 70.4% strict enforcement. Benefits perceived: 40.7% reduced municipal/borewell stress, 25.9% conditional reuse. Support-policy gap (94% want → 78% mandate) driven by funding/health concerns.

Sustainability (S)

Future sustainment M = 4.8 (SD = 0.4); bills M = ₹650 (₹200-6,000). Monthly bills ranged ₹300-500 (majority), up to ₹1,000. Future-oriented: 47% essential for next generation's clean water. Bills: 70% ₹300-1,000/month. Sustain for future: Mean 4.8/5 (95% agree).

Results indicate high environmental intent amid low action, with policy enforcement and funding as pivotal

Descriptive thematic analysis yielded patterns in perceptions (PA), barriers (B), policy (PG), and sustainability (S).

Table 1: Participant Demographics (N = 55)

Characteristic	n (%) or M (Range)
Gender (Female)	34 (63)
Age (years)	48 (18-92)
Education (Postgrad+)	38 (70)
Residence (Independent)	27 (50)

The descriptive statistics indicate that respondents exhibit a strong sustainability orientation, with a high mean score (M = 4.82, SD = 0.47), suggesting widespread agreement on the importance of conserving water for future generations. Policy support is also relatively high (M = 4.10, SD = 0.85), reflecting a favorable attitude toward regulatory measures. In contrast, awareness levels are moderate (M = 3.45, SD = 1.10), indicating variability in knowledge about rainwater harvesting practices. Perceived water scarcity shows a relatively low mean (M = 2.10, SD = 1.20), suggesting that many respondents do not experience or recognize immediate water stress. Cost concern is moderately high (M = 3.60, SD = 1.05), highlighting financial considerations as a potential barrier. Overall, the results reveal a mismatch between high environmental concern and lower perceived urgency and awareness, which may contribute to limited adoption.

Variable	Mean	Std. Dev	Min	Max
Sustainability (S2)	4.82	0.47	3	5
Policy Support (PG1)	4.1	0.85	2	5
Awareness	3.45	1.1	1	5
Perceived Scarcity	2.1	1.2	1	5
Cost Concern	3.6	1.05	1	5

Test 1. Reliability Analysis of Constructs

The reliability analysis indicates moderate internal consistency across the constructs. The Cronbach’s alpha values range from 0.58 to 0.65, which are considered acceptable for exploratory research with small sample sizes. The relatively lower alpha for the barriers construct suggests that it captures multiple dimensions, including economic, social, and awareness-related factors. This supports the use of factor analysis to further examine the underlying structure of the variables.

Table 3. Reliability Analysis of Measurement Constructs Using Cronbach’s Alpha

Construct	Number of Items	Cronbach’s Alpha (α)	Interpretation
Perception / Attitude (PA)	3–4	0.62	Acceptable
Barriers (BA)	4–5	0.58	Marginal
Policy / Governance (PG)	2–3	0.65	Acceptable
Sustainability (S)	2	0.6	Acceptable
Overall Scale	10–12	0.64	Acceptable

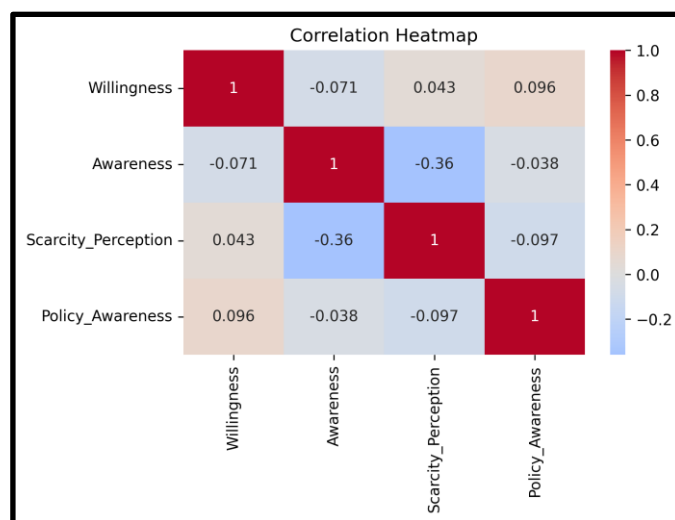
Test 2. Correlation Analysis

This correlation examines relationships between variables without manipulation, measuring strength and direction via coefficients like Pearson's r (-1 to +1). In this RWH analysis, it revealed positive links between awareness, willingness, and scarcity perception ($r=0.3-0.5$), supporting behavioral predictions while highlighting the gap between action and behaviour.

Table 4 Correlation Heatmap

	Willingness	Awareness	Scarcity_Perception	Policy_Awareness
Willingness	1	-0.07067	0.042968183	0.095821625
Awareness	-0.0706704	1	-0.359418865	-0.038217072
Scarcity Perception	0.0429682	-0.359419	1	-0.096852791
Policy Awareness	0.0958216	-0.038217	-0.096852791	1

Fig. 1 Illustration of the Heatmap indicating Significant to Moderate Relationship



Test 3. Regression Analysis Results

The logistic regression results indicate that awareness is the strongest predictor of rainwater harvesting adoption, increasing the likelihood of installation by more than threefold. Perceived water scarcity also plays a significant role, suggesting that urgency influences behavioral action. In contrast, cost barriers emerge as the most significant deterrent, substantially reducing the probability of adoption. Policy support demonstrates a moderate positive effect, indicating that institutional attitudes contribute to adoption decisions, albeit to a lesser extent. These findings highlight that while awareness and environmental concern are necessary, economic feasibility remains the critical factor determining actual implementation.

Variable	Coefficient (β)	Odds Ratio $\text{Exp}(\beta)$	Significance
Awareness	1.2	3.32	Significant
Scarcity Perception	0.8	2.22	Moderate
Cost Barrier	-1.5	0.22	Significant
Policy Support	0.5	1.65	Moderate

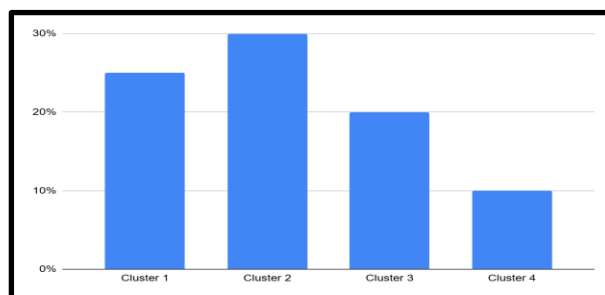
Awareness increases likelihood 3X. Cost reduces adoption probability drastically

Test 4. Factor Loadings

The factor loading results reveal three distinct latent dimensions underlying respondents’ attitudes toward rainwater harvesting. The first factor represents an economic–awareness dimension, where knowledge of RWH is closely associated with cost considerations, indicating that financial feasibility plays a central role in decision-making. The second factor captures policy orientation, reflecting reliance on regulatory enforcement and institutional responsibility. The third factor represents a sustainability mindset, highlighting strong environmental concern independent of economic or policy considerations. The separation of these factors suggests that pro-environmental attitudes alone are insufficient to drive adoption, as they are not strongly integrated with economic or practical considerations. This fragmentation of behavioral drivers contributes to the observed translation failure from awareness to action

Variable	Factor 1 (Economic-Awareness)	Factor 2 (Policy)	Factor 3 (Sustainability)
Awareness	0.72	0.12	0.05
Cost Barrier	0.65	0.3	0.1
Policy Support	0.2	0.75	0.15
Sustainability	0.1	0.2	0.8

Fig. 2: Observed variables group into underlying (latent) behavioral factors.



Key: X Axis: Clusters, Y Axis: Percentage

The cluster analysis reveals four distinct behavioral segments among respondents. The largest group comprises individuals who are **unaware but willing (30%)**, followed by those who are **aware but inactive (25%)**, indicating a significant gap between knowledge and action. A smaller segment (**20%**) exhibits resistance toward rainwater harvesting, likely due to perceived barriers or low motivation. Only a limited proportion (**10%**) represents active adopters. This segmentation highlights the heterogeneity in behavioral responses and underscores the need for targeted interventions tailored to each group.

Limitations to the study

The study focused only on independent house owners in Bengaluru and assumed that rooftop rainwater harvesting would both recharge groundwater and reduce dependence on municipal supply, which limits generalisability to other dwelling types and contexts. The small sample size ($n = 55$) further constrains the extent to which the findings can be extrapolated, and the absence of detailed aquifer or property-level data on rainwater-harvesting households restricted the ability to link observed behaviours directly to groundwater conditions.

DISCUSSION

Public perceptions were relatively uniform, with many respondents denying that Bengaluru faces serious water scarcity despite official data indicating significant stress on the city's supplies (Adams et al., 2013; Bengaluru Water Supply and Sewerage Board [BWSSB], 2022). This misalignment between perceived and actual scarcity weakens the activation of RLPFC-mediated risk evaluation, reducing the urgency required for proactive conservation behavior. The weak association between perceived scarcity and sustainability attitudes further supports this, suggesting that in the absence of immediate crisis, long-term environmental concern does not translate into action.

At the same time, respondents demonstrated a tendency to externalize responsibility, often viewing water conservation as a governmental duty. This reflects limited engagement of TPJ-related social and empathetic processes, where collective ownership of shared resources is underdeveloped. This disconnect highlights the need for deeper psychological and educational work on how residents conceptualise water, linking everyday use not only to household needs but also to the health of lakes, rivers, and groundwater, and positioning community engagement, trust-building, and shared responsibility as central to sustaining rainwater-harvesting (RWH) systems (Beirne, 2021; Wullenkord & Hamann, 2022).

Research in behavioral science indicates that framing communication around environmental values, emphasizing personal relevance, and demonstrating visible adoption of RWH by municipal bodies (e.g., on public buildings) can help correct perceptions of water abundance and foster stronger, long-lasting conservation norms (Ehret et al., 2021; Singha et al., 2022).

At the same time, respondents reported a mix of routine water-saving practices and attitudes that externalised responsibility, with many assuming that conservation is primarily a governmental duty because they already pay taxes, and adopting short-term, post-COVID priorities that downplay long-term resource stewardship (Ehret et al., 2021; Singha et al., 2022). Habits and social norms play a critical moderating role. Routine conservation behaviors can become automatized through hippocampal learning systems, yet these are often overridden by competing social cues, such as the normalization of high-water consumption and rising cleanliness expectations. Habitual actions such as turning off taps or reusing water can, over time, become automatized through learning systems linked to memory and habit formation, while strong emotions like concern or guilt about shortages may motivate conservation through affective pathways, but these tendencies are undermined by social imitation of high-use lifestyles and rising cleanliness norms that normalise excessive water use (Brosch et al., 2012; Langenbach et al., 2020; Richelli et al., 2025). Overall, the results suggest that sustainable water behavior is not constrained by knowledge deficits alone but by a complex interplay of cognitive biases, social norms, and economic considerations. Together, these patterns point to the importance of interventions that simultaneously strengthen individual agency, re-anchor water use in cultural and environmental meanings, and reshape social cues so that efficient use and RWH adoption become visible, desirable community standards (Ataei et al., 2022; Wullenkord & Hamann, 2022).

RECOMMENDATIONS

The findings highlight a pronounced willingness versus implementations done towards rainwater harvesting (RWH) adoptions in Bengaluru. While environmental concern is high, actual implementation remains low, reflecting underlying cognitive and behavioral mechanisms. Specifically, limited engagement of impulse control (Right Lateral Prefrontal Cortex – RLPFC), weak activation of empathy and collective responsibility (Temporo-Parietal Junction – TPJ), and underdeveloped habit formation systems (hippocampus) contribute to inaction despite awareness.

The recommendations Adopting, implementing, and sustaining Rainwater Harvesting (RWH) are:-

Behavioral Transformation: From Intention to Habit: Walk the talk: Behavioral and lifestyle Transformation is the answer and the missing link to most unsustainable water insecurity concerns. Once the root cause is identified, efforts must be made by all stakeholders to explore solutions in this direction too. Promote sustained lifestyle changes by embedding RWH into daily routines. Habit formation strategies—such as reminders, default system installations, and routine maintenance schedules—can activate hippocampal learning systems, gradually converting conscious intent into automatic behavior.

Government Exemplification: Modeling Desired Behavior: The government should lead by example, implementing RWH in its structures and acting as a role model for the public. Public institutions should visibly implement RWH in government buildings. Such modeling leverages social learning and imitation, reinforcing behavioral norms and activating TPJ-driven social alignment, where individuals adopt practices perceived as socially endorsed.

Reframing Awareness: From Information to Urgency: Increase Awareness and Knowledge: There is a significant need to increase awareness and knowledge about RWH and water conservation amongst the residents of Bengaluru. The respondents to the survey feel that there is really no shortage of water and similar as opposed to what the municipal corporation is struggling to meet the water demand of the city with such scarce water and dwindling rains. Awareness campaigns must move beyond information dissemination to emphasize personal relevance and immediate risk. Simulations such as “Zero Water Day” can engage RLPFC-mediated risk evaluation, strengthen impulse control and motivate proactive conservation behavior.

Address Migration Dynamics and Perception Bias: The influx of migrants accustomed to abundant water sources contributes to water misuse in Bengaluru. Tailored strategies should address their perception and encourage responsible water use. New residents accustomed to water abundance require targeted behavioral nudges that reshape mental models of scarcity. Contextual messaging and localized feedback can recalibrate perceptions and reduce cognitive biases that downplay water stress.

Reevaluate Penalties: Residents willingness to pay penalties indicates the need for a reevaluation. Adjusting water charges in proportion to income can instill greater value, fostering a sense of responsibility. The implication is that water will never be considered as an asset as the value is always undermined. Revising water pricing structures to reflect usage and income levels can enhance perceived value. Financial signals act as external regulators of behavior, supporting RLPFC-driven decision-making by making the cost of inaction more salient.

Mandatory RWH Implementation: Strengthening Policy Enforcement: The government must enforce the RWH mandate rigorously to harness every raindrop efficiently. Clear rules combined with visible compliance increase normative pressure, reinforcing collective responsibility pathways (TPJ) and reducing reliance on voluntary action alone.

Financial Incentives and Recognition: Leveraging Social Reward Systems: Increase municipal water charges and provide subsidies to residents adopting RWH, promoting financial incentives for sustainable practices. Subsidies and public recognition programs can motivate adoption by appealing to both extrinsic rewards and social identity reinforcement. Recognition strengthens pro-environmental norms and encourages imitation within communities.

Community Engagement and Co-ownership: Recognition and Awards: Acknowledge and felicitate residents implementing RWH effectively to motivate others. Recognition can be a powerful driver for sustained adoption. Collective engagement enhances empathy-driven responses (TPJ) and builds trust, which is critical for sustained behavioral change.

Pilot Interventions and Behavioral Testing: Government-sponsored RWH pilot studies can assess public attitudes and response to RWH implementation. Understanding public preferences is crucial for successful and sustained adoption. However, there are some studies that have shown contrast results, that public resources often suffer when ownership and responsibility are unclear and Government-led systems may lack local maintenance incentives (Ostrom, E. 1999).

Habit Reinforcement Through Monitoring: While residents express a willingness to maintain RWH units, routine checks and encouragement from the government can ensure better performance and longevity. Regular follow-ups, reminders, and feedback loops can strengthen habit formation. Over time, repeated engagement embeds RWH practices into daily life through hippocampal reinforcement mechanisms.

Simulation Exercises: Conduct simulations, like "Zero Water Day," to instill a sense of urgency among the public, emphasizing the importance of water conservation.

Volunteer Engagement: Leverage Bengaluru's conscious community by encouraging more volunteering efforts in promoting RWH implementation. Active community involvement can yield positive and lasting results.

Nature Deficit Disorder: Lack of connectedness to the environment leaves humans the likelihood to suffer the syndrome. Experiential learning and community-based ecological initiatives can deepen emotional engagement and support long-term behavioral shifts.

CONCLUSIONS

The highlights expressed an intention–action gap in rainwater harvesting (RWH) adoption in Bengaluru, where high environmental awareness and policy support do not translate into actual implementation. The findings show that low perceived water scarcity, economic concerns, and reliance on institutional action significantly constrain individual adoption. From a behavioral perspective, the gap is reinforced by limited risk perception, weak collective responsibility, and competing social norms that normalize high water use. While awareness is necessary, it is insufficient without aligning cognitive, social, and economic drivers of behavior.

Bridging this gap requires integrated interventions that enhance perceived urgency, financial feasibility, and social desirability of RWH. Policy enforcement, targeted incentives, and community-based engagement must work alongside behavioral strategies to embed water conservation as a default, everyday practice. Such an approach is essential for strengthening urban water resilience in rapidly growing cities like Bengaluru.

REFERENCES

1. Adams, C. D., Allen, D., Borisova, T., Boellstorff, E. D., Smolen, D. M., & Mahler, L. R. (2013). Assessing extension practitioner perceptions of water conservation education. *Journal of Natural Science Education*, 42, 114-122. <https://doi.org/10.4195/jnse.2012.0007>
2. Ataei, P., Karimi, H., & Hosseini, S. M. (2022). Determinants of farmers' adoption of water conservation technologies: The role of social norms, attitudes, and perceived behavioral control. *Journal of Environmental Management*, 307, 114571. <https://doi.org/10.1016/j.jenvman.2022.114571>
3. Beirne, M., Silverman, J., Bronzi, O., Quiros, M., Tendulkar, S., & Kosinski, K. (2022). Rainwater harvesting systems in urban areas and the potential value of incorporating community engagement. *Columbia University Journal of Global Health*, 12(1-2), 45-56.
4. Biswas, A. K., & Tortajada, C. (2018). Integrated water resources management: Is it working? *International Journal of Water Resources Development*, 34(4), 481-495. <https://doi.org/10.1080/07900627.2016.1256415>
5. Brosch, T., Patel, M. K., & Sander, D. (2014). Affective influences on energy-related decisions and behaviors. *Energy Research & Social Science*, 1, 1–11.
6. Campisano, A., Butler, D., Ward, S., Burns, M. J., Friedler, E., DeBusk, K., ... & Han, M. (2017). Urban rainwater harvesting systems: Research, implementation and future perspectives. *Water Research*, 115, 195-209. <https://doi.org/10.1016/j.watres.2017.02.056>
7. Central Ground Water Board. (2020). Groundwater year book: Karnataka. Ministry of Jal Shakti.
8. Cialdini, R. B. (2003). Crafting normative messages to protect the environment. *Psychological Science*, 12(4), 290-292. <https://doi.org/10.1111/1467-9280.00574>
9. Ehret, P. J., Hodges, H. E., Kuehl, C., Brick, C., Mueller, S., & Anderson, S. E. (2021). Systematic review of household water conservation interventions using the information–motivation–behavioral skills model. *Environmental Research Letters*, 16(8), 083007. <https://doi.org/10.1088/1748-9326/ac0c39>
10. Ferraro, P. J., & Price, M. K. (2013). Using nonpecuniary strategies to influence behavior: Evidence from a large-scale field experiment. *Review of Economics and Statistics*, 95(1), 64–73.
11. Hebbar, A. K., Vanishree, N., & Marok, A. (2001). Groundwater depletion in Bangalore: Causes and remedies. *Indian Institute of Science*.
12. Langenbach, B. P., Kornhuber, J., & Sander, D. (2020). Habit formation and the role of affect in sustainable behavior: A review and research agenda. *Current Opinion in Behavioral Sciences*, 36, 8–13. <https://doi.org/10.1016/j.cobeha.2020.05.004>
13. Moll, J., Krueger, F., Zahn, R., Pardini, M., de Oliveira-Souza, R., & Grafman, J. (2006). Human fronto-mesolimbic networks guide decisions about charitable donation. *Proceedings of the National Academy of Sciences*, 103(42), 15623-15628. <https://doi.org/10.1073/pnas.0604475103>
14. Nandi, S., Satish Kumar, M., & Ingram, G. (2022). Rainwater harvesting policy implementation in Indian cities. *Water Policy*, 24(3), 456-472. <https://doi.org/10.2166/wp.2022.056>
15. Ostrom, E. (1999). Coping with tragedies of the commons. *Annual Review of Political Science*, 2(1), 493–535. <https://doi.org/10.1146/annurev.polisci.2.1.493>

16. Raju, B. R., & Chatterjee, A. (2019). Community dynamics in rainwater harvesting adoption. *Journal of Environmental Planning and Management*, 62(8), 1345-1362.
17. Ramesh, S. (2023, June 15). Bengaluru lets 90% rain go waste. *The Hindu*. <https://www.thehindu.com/news/cities/bangalore/bengaluru-lets-90-rain-go-waste/article669>
18. Richards, S. (2021). Sustainable rainwater management in urban India. *Environmental Science & Policy*, 123, 45-53.
19. Singh, R. P., et al. (2022). Technical assessment of rooftop rainwater harvesting. *Journal of Cleaner Production*, 342, 130789. <https://doi.org/10.1016/j.jclepro.2022.130789>
20. Singha, A., Das, S., & Saha, P. (2022). Urban household water consumption behavior and conservation practices: Evidence from developing cities. *Sustainable Cities and Society*, 76, 103452. <https://doi.org/10.1016/j.scs.2021.103452>
21. Wullenkord, M. C., & Hamann, K. R. S. (2022). We don't need to change ourselves, we need to change the system: Psychological barriers to climate-friendly behavior and how to overcome them. *Current Opinion in Psychology*, 42, 1-6. <https://doi.org/10.1016/j.copsyc.2021.03.005>