Water Security for Growth and Development

Background

- The issue is of water management, not outright scarcity since water is a renewable resource.
- Water management needs immediate attention especially in towns and cities of peninsular India as they are located mainly on hard rock and therefore high dependence on surface water.
- Bangalore has a population of 13 million as of 2019 and the population density has increased 47% in the last ten years (World Population Review, 2019)
- A large section of urban population, specially the poorer section, collects water far away from their premises, thus incurring an indirect opportunity cost (urban households lose Rupees 114, 715 million per year as opportunity cost to water collection)
- Supply side – Exploitation of groundwater (rather than RWH) is seen as a major source of augmenting supply
- Demand side – Careless attitude of users towards consumption of water

Research Questions

- What is the economic impact of achieving or failing to achieve water security?
- What are the level of investments (effort, finance, time) required for water management?

Scope

- The scope is limited to multi-storied apartment complexes in metropolitan settings

Comparative Case Study

Parameters	The Greens		Mantri Astra
No. of apartments	171		149
Borewells	2		3
Active	2		0
Water drawn from borewell	• 90000 litres/day in 2015 • 20000 litres/day 2019		• 15000 litres/day in 2018 • 0 in 2019
WATER STEWARDSHIP ACTIONS	INVESTMENTS		
	Rainwater Harvesting Storage tanks	85000 litres	40000 litres
	Recharge pits	6	6
	Sewage Treatment Plant – Toilet Flush	Rs 13344	NIL
	Individual Water Meter	Rs 14075	NIL
	Additional RW Storage	Rs 2924	NIL
ECONOMIC IMPACT	BEFORE - 2015	AFTER - 2019	
Annual Water Consumption (litres)	150000*30*12 = 54000000	60000*30*12=21600000	933333*30*12=33600000
Annual Water Bill	Rs 1684746	Rs 784292	200000*12= Rs 2400000
ANNUAL COST SAVINGS	RS. 900454		
REDUCTION IN CONSUMPTION	52%		

Key Observations

- Water level depleting at an alarming level
  - FROM 6 active borewells in 2015 that yielded 90000 litres a day TO 2 active borewells in 2019 that yield only 20000 litres a day
- Erratic monsoons leading to unpredictability
  - Fifth-driest June for India (IMD, 2019) & Wettest August for Karnataka in 118 years, receiving 279% more rainfall than average (Karnataka State Natural Disaster Monitoring Centre, 2019)
- Water stewardship
  - Individual water meters leading to mindful consumption
  - Reuse of STP water for flush tanks leading to reduction in water bills

Water stewardship is not a goal, it is an essential determinant of thriving societies

Recommendations

- Individual Water Meters for mindful consumption
- Sewage Treatment Plant for reuse/recycle
- Additional rain water storage tanks to maximise rain water capture
- Projected Savings:
- ~ 50 % of water consumption and water bills
- Leading to
- ~ 118 mn litres annually
- ~ Rs 1.2 mn annually

Best Practices

1. Supply Side:
   - Augmenting supply by tapping rainwater through RWH
   - Reusability – implement STP water for household purposes such as flushing and watering plants
   - Mandating recharge wells in residential and commercial dwellings
2. Demand Side:
   - Stop Undervaluation – reflect the true value of water through slab pricing, domestic and industrial
   - Limit access of Industry, Agriculture and residences, to common water sources, to reduce overuse
   - Levy Rain Taxes – proportional to impervious surfaces that do not absorb rain water
3. Holistic Look at water, food, energy and economic development sectors – mindful consumption at macro and micro level:
   - food wastage and water consumption
   - consumerism and water consumption
   - Reducing water footprint

The Way Forward

"The movement towards water conservation has to take place at the grassroots level. It cannot become a mere Government programme. People from all walks of life have to be integrated in this movement"

Narendra Modi
Honorable Prime Minister of India

Water is inextricably linked to economic prosperity, social well-being and environmental integrity. The emerging situation needs balancing of development objectives and environmental concerns. Requires creating awareness of connection between water and well-being.

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