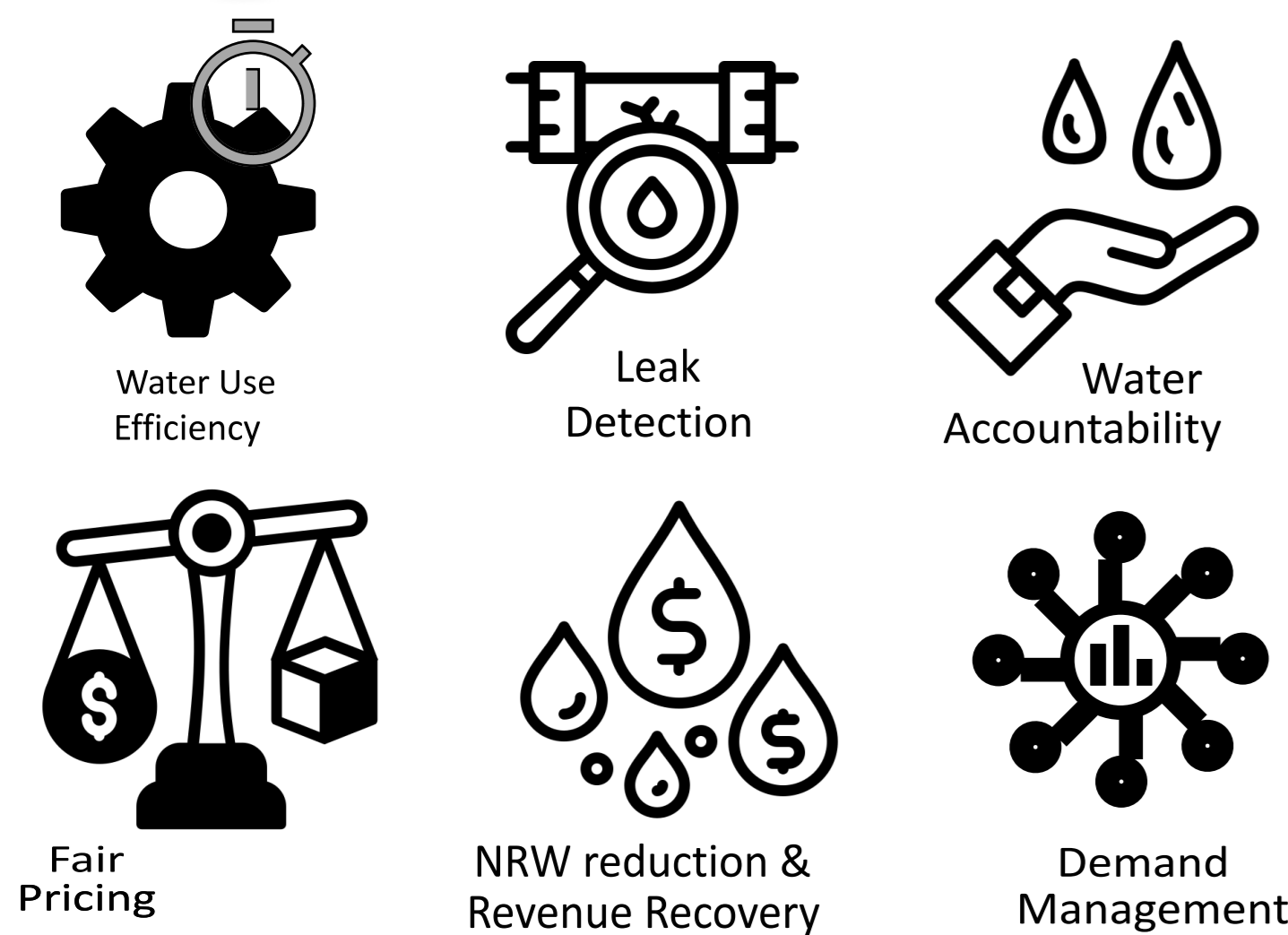


# Urban Water Metering Policies in India - A Study

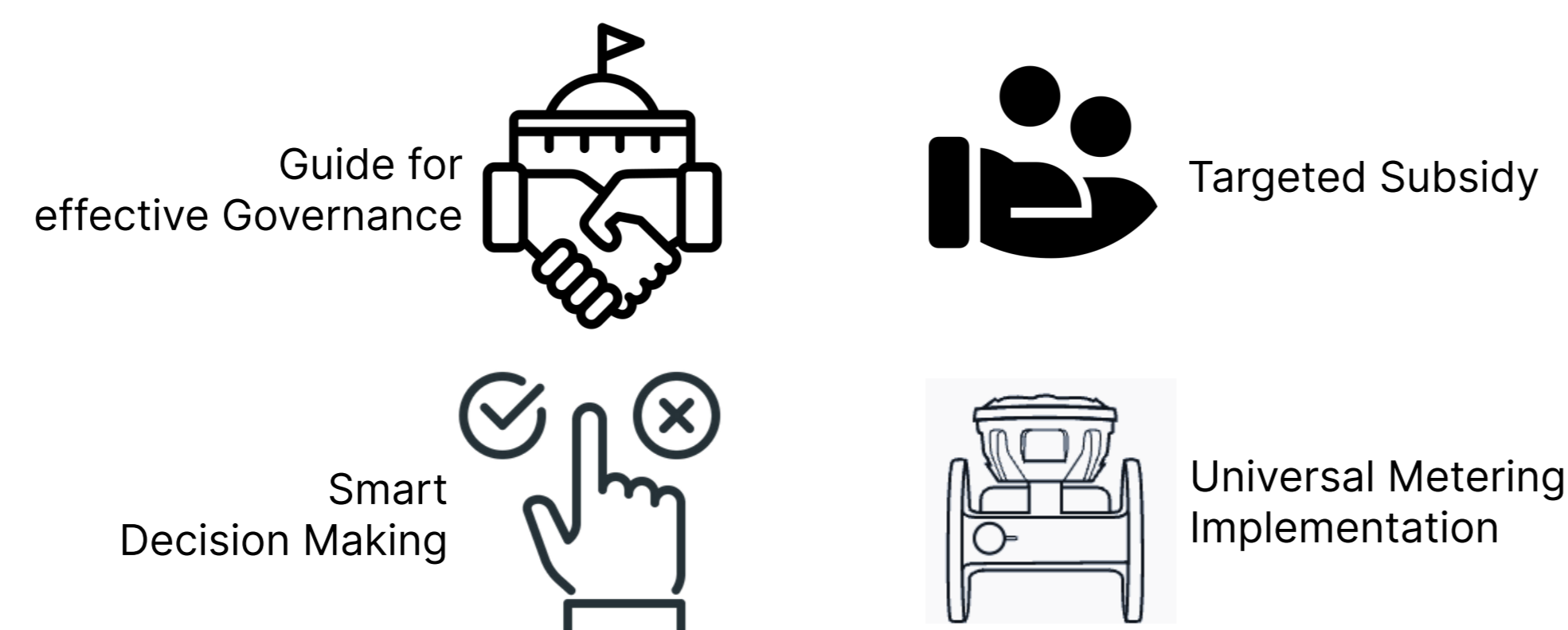
Rohini Srivyshnavi Korlakunta; Surabhi Singh; Vinay Chataraju

## Why metering is important for sustainable water management

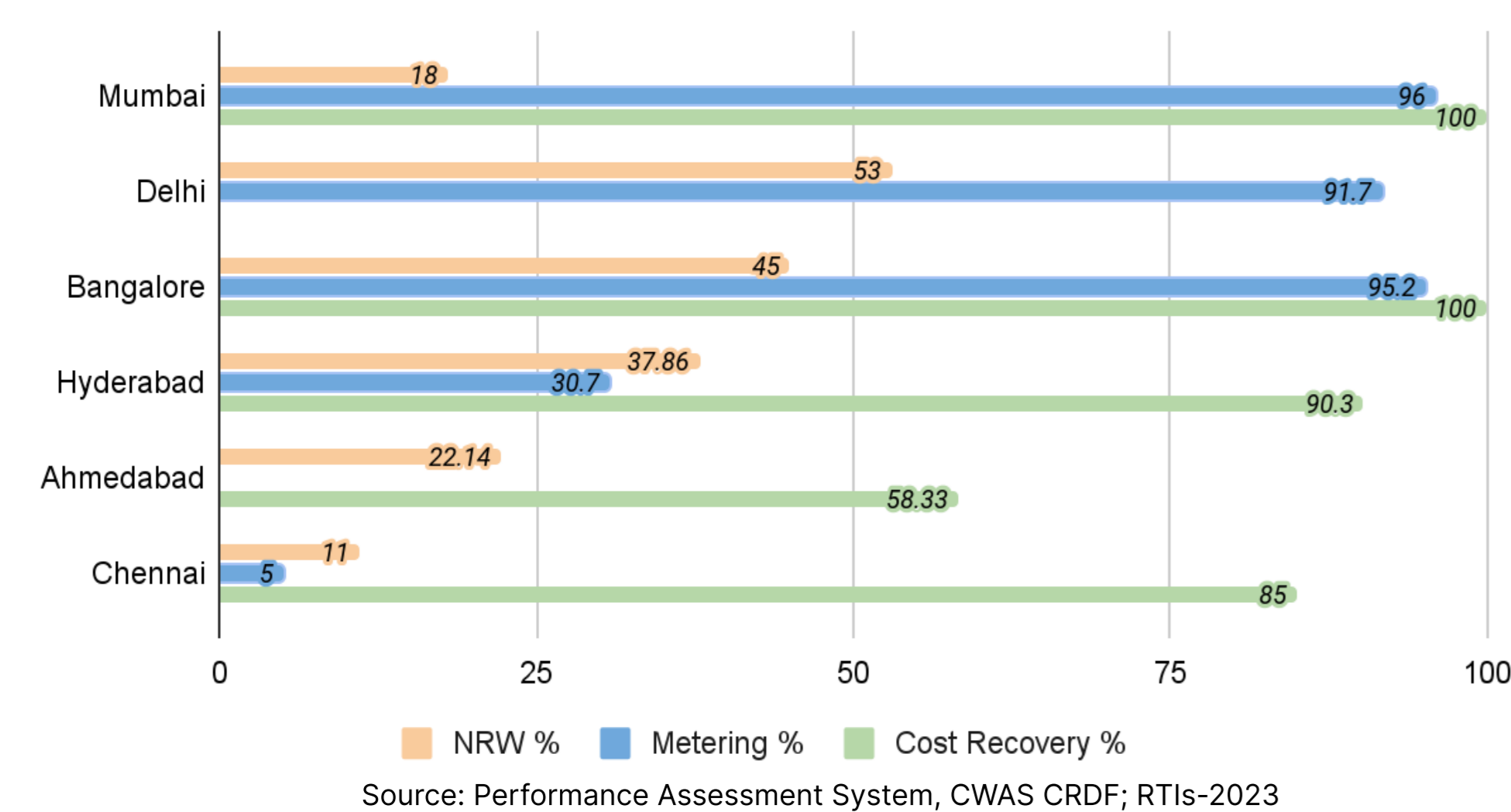
### Why metering?



### Why metering policy?



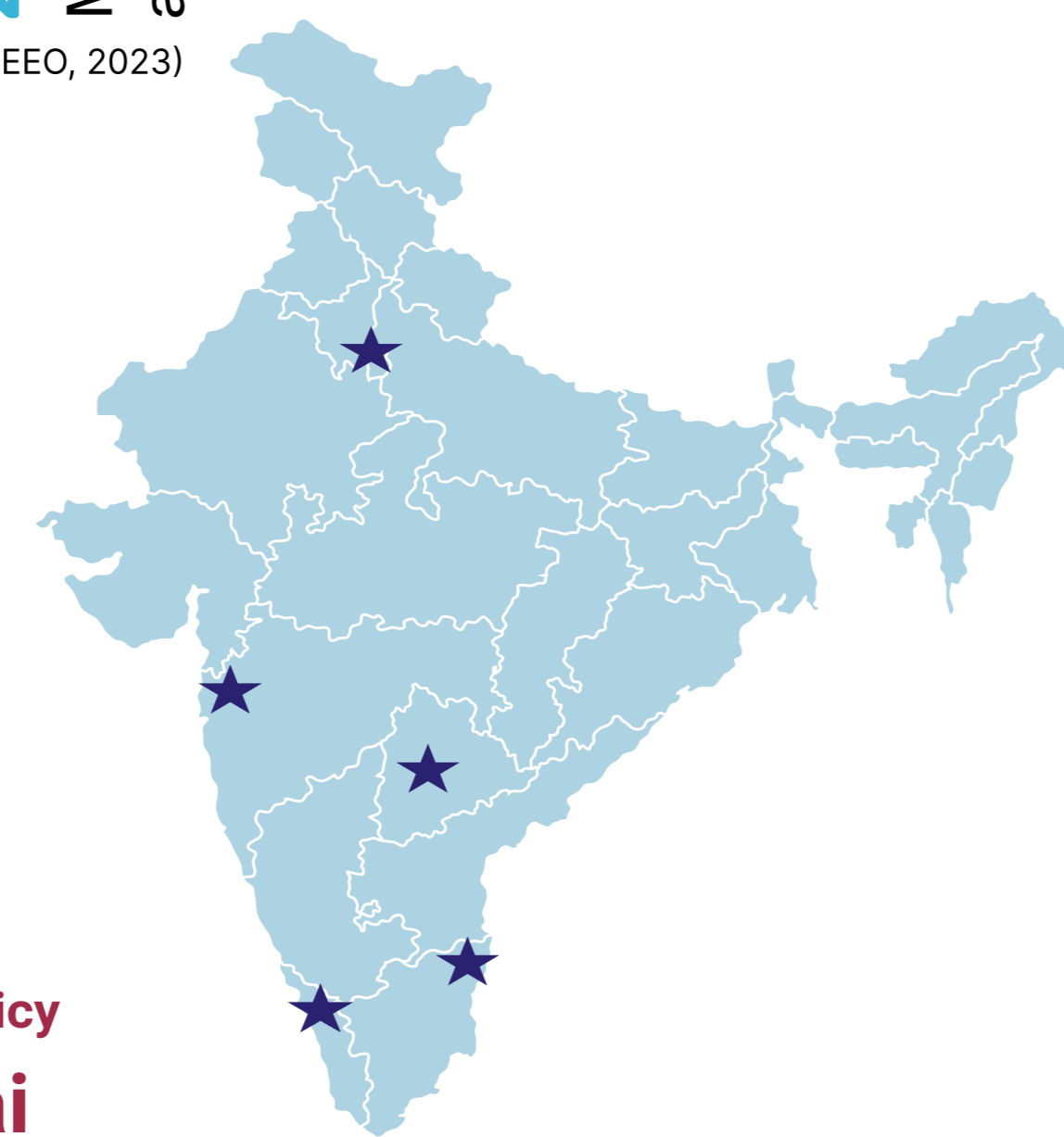
Non-Revenue water, Extent of metering & cost Recovery in top 6 cities of India



Smart Metering Adoption



20-30% Meters (mostly mechanical) are non-functional (CPHEEO, 2023)



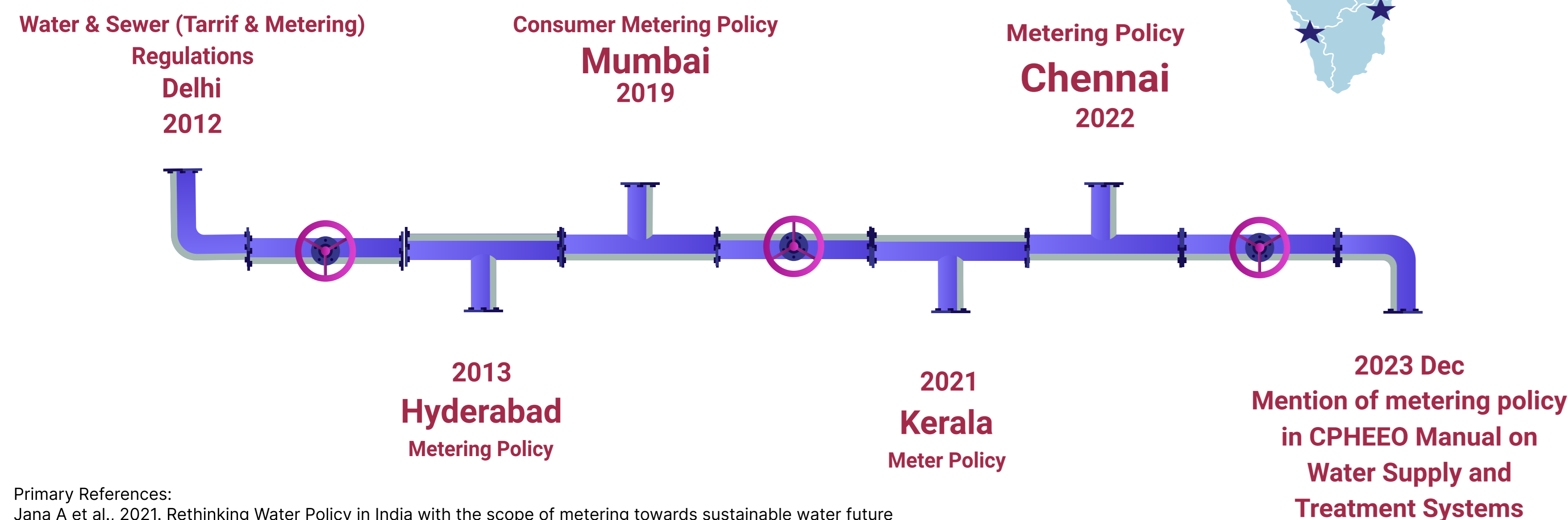
No. of National level policies that emphasise 'Water Metering'

(Including the National Water Policy 2012 and the Draft Water Framework Law of India 2016)

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(Jana et al., 2021)

## Timeline of water metering policies



Primary References:  
Jana A et al., 2021. Rethinking Water Policy in India with the scope of metering towards sustainable water future  
Performance Assessment System, Center for Water and Sanitation, CEPT Research and Development Foundation  
Manual on Water Supply and Treatment Systems (Drink from Tap) - Part A, CPHEEO  
Metering Regulations, Guidelines and Policies of DJB, HMWSSB, MCGM, KWA, CMWSSB

## Comparison of five water metering policies in India and guidelines in CPHEEO Manual

	Includes all consumer types	Procurement & ownership	Provision for service model	Defined procedure for agency Implement	Clearly defined installation, O&M guidelines	Meters types	IP 68	Policy for 100% digital meters	Policy for 100% AMR meters	In house testing & Calibration lab	Geo-Tagging of meters	Defines tampering	MDM Software	Defines penalties for non-compliance	Provision for mobile/ e-complaints	Policy open for public consultation
Chennai	N	B	N	N	Y	M, E, U	N	N	Y	Y	Y	Y	Y	Y	Y	Y
Mumbai	Y	C	N	Y	Y	M, E, U	N	Y	N	Y	N	N	N	N	Y	Y
Delhi	N	B, C	N	N	N	M, E	N	N	N	ND	N	N	N	Y	Y	ND
Hyderabad	Y	B, C	N	Y	N	M, E, U	N	N	N	N	N	Y	Y	Y	Y	ND
Kerala	Y	C, B	N	Y	Y	M, E, U	N	N	N	N	N	N	N	N	Y	ND
CPHEEO Manual	Y	B	Y	Y	Y	NR	Y	NR	NR	Y	Y	Y	Y	Y	Y	NM

B- Board, C- Consumer, in the order of priority  
M- Mechanical, E- Electromagnetic, U-Ultrasonic  
Y- Yes, N-No, ND- No Data, NM - No Mention, NR - No Recommendation

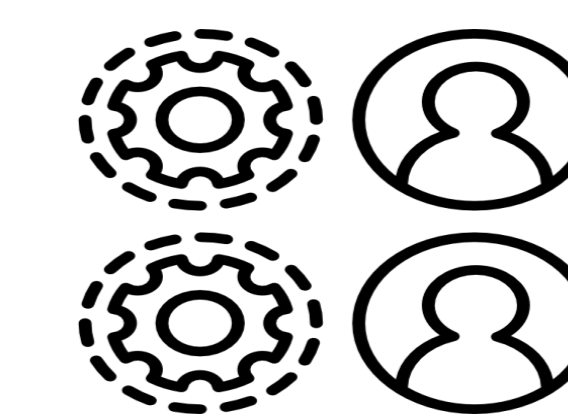
## Comparison of different types of meters

	Mechanical	Electro Magnetic	Ultrasonic
Working Principle	Paddle Wheel, Turbine or mechanical with moving counter	Electromagnetic induction principle - Faraday's Law	Ultrasonic Measurement principle - Transit Time measurement
Air Flow Measurement	Accuracy is affected by air flow	No effect on accuracy	No effect on accuracy
Reverse Flow Calculation	Not possible	Possible	Possible
Operating Accuracy at low flow	Poor	Good	Good
IP68	Available but a lot of failure due to moving parts	Only flow tube	Yes
Maintenance	High due to moving parts and its wear and tear	Less	Less
Cost	Low initial cost & high maintenance cost	Cost increases with size	Cost increases with size
Power Requirements	NA	High - External Power Supply Required Generally	Low - Can run on Batteries
Tampering	Susceptible to physical tamper - cutting of paddle wings - Reverse installation of meter - Reverse blowing of air	- Turning off power supply - Placing of magnets - High voltage power - Low TDS effects accuracy	- Deposition of High suspended solids on sensors affect accuracy

## Way forward: Fast Tracking policy adoption in India



Every utility should have metering policy



Dedicated resources on metering

- Choosing right metering technology, communication technology and business model is key
- Universal adoption of smart meters in Urban Utilities
- A National Level comprehensive guideline on the metering policy framework