

Water Distress in Growing Cities – Issues & Challenges



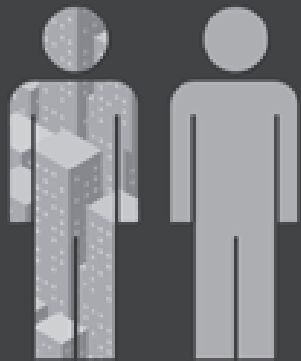
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IAPMO India



An urbanizing world



Today, one in two people on the planet live in a city

Rising urban population



Every second the urban population grows by 2 people

More people = Higher water demand

The world's population is growing by about **80 million** people a year, implying increased freshwater demand of about **64 billion** cubic metres a year

Green Approach- A MUST today- for Sustainability (better life cycle costs and higher performance)- better brand visibility-Better Comfort

- What is Green Approach? – Using technologies which aim to satisfy the water related needs of the community at the lowest cost to society whilst minimizing environmental and social impacts
- The green technologies can be described under two broad categories:
 - **Water Efficiency**
 - **Innovative Technologies**

Water Efficiency

**Focus required on Good Plumbing/
Practices implemented by Trained/
Skilled Plumbers**

- The optimization hierarchy for achieving water efficiency in a cost-effective manner involves:
 - Reducing demands : Achieved through implementation of measures such as a water-efficient landscaping design, water efficient fixtures etc.
 - Meeting demands efficiently : Achieved through optimization of the system design by using measures such as Use of high-efficiency drip systems, climate based controls, such as moisture sensors with water supply shut-off arrangements , etc.
 - Greening the supply of any residual, reduced demand.

Innovative Wastewater Technologies

**Focus required on Good Plumbing
Practices implemented by
Trained/ Skilled Plumbers**

- Innovative water/ waste technologies generally is a term used for options such as:
 - Ultra high-efficiency plumbing fixtures;
 - Composting toilets and waterless urinals (which use no water);
 - Foam flush composting toilets (which require minimal water per use);
 - Smart sewers (which include small diameter pressurized sewer systems) to eliminate wet weather infiltration and also allow for control over loading on sewage treatment plants.

Importance of Plumbing Increased

As Buildings/Building Clusters became more complex

- ❑ Introduction to high-rise buildings
 - Multistage pumping
 - Service floors
 - Large water tanks
- ❑ Basements extended beyond building line
 - Need to divert plumbing lines at basement ceiling
 - Coordination with other agencies
- ❑ Complex structures
 - Post tension slabs
 - Large spans
 - Concrete walls

Importance of Plumbing Increased

As Buildings/Building Clusters became more complex

Due to the new Utilities required

- High Pressure requirement for some fixtures
- Dual piping
- Solar, Central hot water systems
- Central cool drinking water system
- Landscaping on terraces and parkings
- Hydro-pneumatic Systems
- Multiple metering
- Building Management Systems

Importance of Plumbing Increased

As Buildings/Building Clusters became more complex

Increase in General awareness

- Health Aspects of Plumbing
- Good plumbing ensures public health
- Good plumbing ensures building health
- Mandatory Rainwater Harvesting
- Water and energy conservation
- Eco-friendly designs

Purpose of Codes

- Codes provide the means to reduce risk to acceptable levels.
- Codes protect the health, welfare, and safety of the public in four ways:





IAPMO-India

- IAPMO is an 87 year old non-government organization (NGO) and non-profit association serving the industry
- We are devoted to Health and Safety, primarily in the Plumbing and Mechanical fields
- In 2007, IAPMO established IAPMO – India.
- This resulted in the International Association of Plumbing and Mechanical Officials (IAPMO) and the Indian Plumbing Association (IPA), working together to establish a model code of plumbing installation and maintenance for all of India.



IAPMO India Activities

- Development of codes and standards
- Code based Education and Training Programs
- Plumbing Education to Employment Program(PEEP)
- Mechanical Education to Employment Program(MEEP)
- Green Plumbers India(GPI) Program
- Testing and Certification of Plumbing and Mechanical products
- Water and Energy Audit
- Inspection body for Infrastructure Projects



PARTNERSHIPS



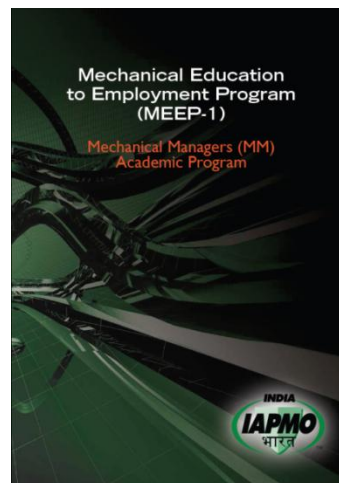
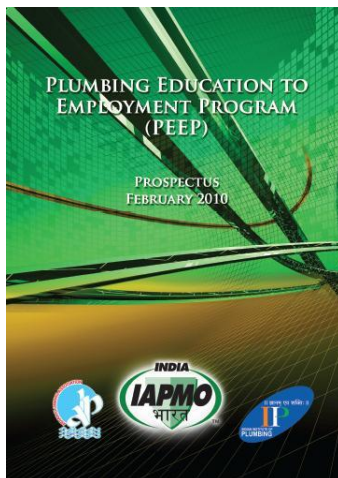
IPA- IAPMO Codes and Publications



All codes are the base for Training and Accreditation Workshops

By following the provisions of UPC-I and GPCS-I you can save 35% or more on water consumption

Training and Accreditation Workshops

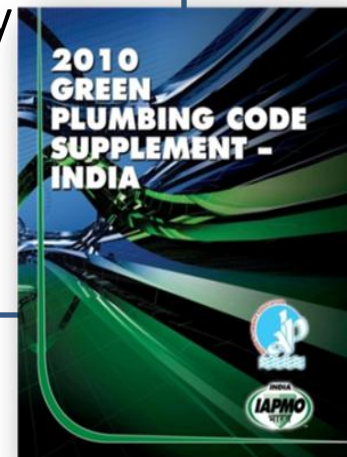


- Recognition to International body
- Industry-Institutional interactions
- World class Plumbing & Mechanical HVAC-R education to staff
- Better plumbing ensuring health & safety of public and structures
- Quality plumbing, more productivity, better reputation
- Better mechanical installations ensuring energy conservation, enhanced IAQ, safety of public and structures and reduced maintenance
- Energy efficient installations, increased efficiency and productivity, **better reputation**

Green Code Supplement Ushers in a New Era

GIVES MUNICIPALITIES ABILITY TO TAKE THE LEAD ON SUSTAINABLE BUILDING INITIATIVES

- To ensure supply of safe drinking water
- To remove the waste water efficiently
- To minimize the risk of failure through vigilance and quality assurance



Genesis

- The need for introducing the rating system for water deficient devices is a recent one in the country and is a result of fast Urban Growth.
- Earlier most of India's population resided in its villages. At the time of independence of the Country the Urban Population was only about 10%.
- In Rural India as also in Urban India, the domestic water needs were met largely from the underground resources.

Alternate Water sources

Rainwater

Reclaimed water

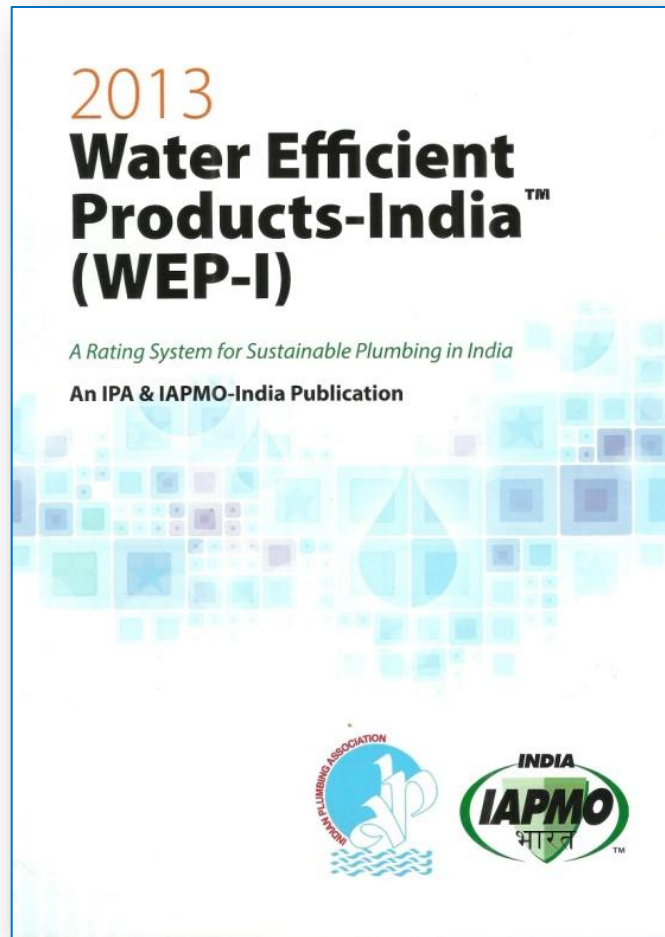
Treated waste water/process water

Treated sewage

Gray water recycling

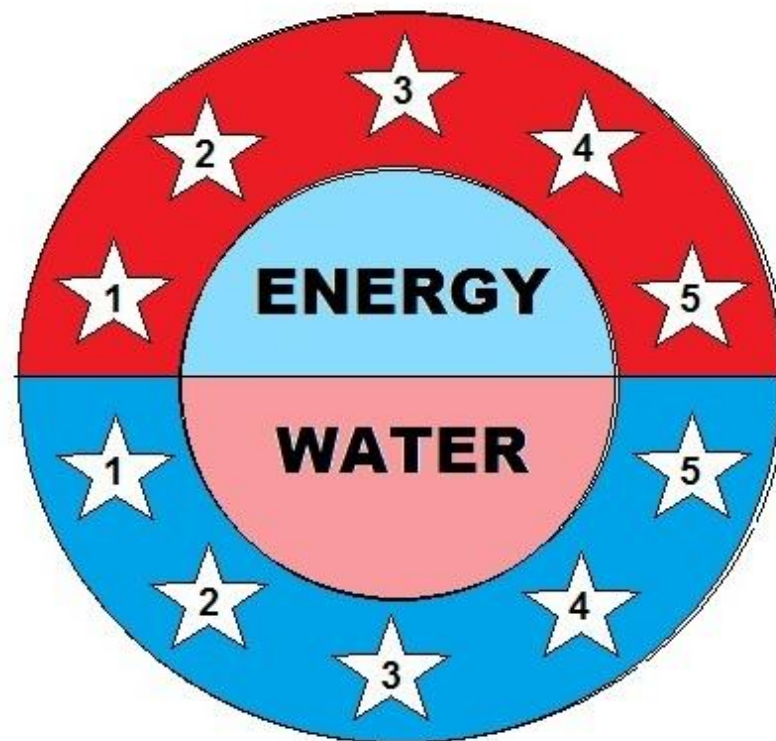
Convenience, cost, hazards

Water Efficient Products- India (WEP-I)



Plumbing Fixtures
considered for
WEP-I Labelling

- WEP-I will seek to;
- Provide credible information on water-efficient products and practices.
- Raise awareness about the importance of water efficiency and recommend water-efficient products.
- Aid consumers to make an informed choice of products that conserve water.



MORE STARS, MORE SAVINGS

Water Conserving fixtures and fittings

1. High Efficiency Toilets (HET) – **20% water savings and more**
2. Waterless and Ultra Low Flow Urinals - Over **88% water savings**
3. Commercial Bathroom Faucets - Over **75% water savings**
4. Showerhead Replacements - **50% reduction**

Maximum flow rates at fixtures

2013 Water Efficient Products - India (WEP-I)

<u>Residential Fixture/Fitting</u>	<u>Conventional</u>	<u>1 Star WEP-I High Efficiency</u>	<u>3 Stars WEP-I Ultra High Efficiency</u>
European water closets:	6 Lpf full flush	4.8 Lpf full flush 1.20 Lpf savings, or 20% Lpf savings	4.0 Lpf full flush 2.00 Lpf savings, or 33% Lpf savings
Urinals:	4 Lpf	3.8 Lpf 0.20 Lpf savings, or 5% Lpf savings	1.0 Lpf 3.00 Lpf savings, or 75% Lpf savings
Shower heads:	10 Lpm	9.5 Lpm 0.50 Lpm savings, or 5% Lpm savings	5.7 Lpm 4.30 Lpm savings, or 43% Lpm savings
Lavatory/Sink Faucets:	8 Lpm	8 Lpm 0 Lpm savings, or 0 Lpm savings	5 Lpm 3.00 Lpm savings, or 38% Lpm savings

Note: Above flow rates are at a working pressure of 5.5 bar (80 psi).

Table 4-1, UPC-I

Look for the Mark, DISCOVER THE VALUE



Uniform Plumbing Code – India (UPC-I)



Uniform Solar Energy Code – India (USEC-I)



Uniform Plumbing Code – India (UPC-I),
and Water Efficient Products – India (WEP-I)



Uniform Swimming Pool Code – India (USPC-I)



Uniform Mechanical Code – India (UMC-I)



Green Product listings to the
Green Plumbing Code
Supplement – India (GPCS-I)

UPC-I, WEP-I, USEC-I, USPC-I and GPCS-I are jointly published by IPA and IAPMO India

“We highly appreciate IAPMO India’s certification of water efficient/ low flow plumbing fixtures and appliances, through WEP-I. ADaRSH lays considerable emphasis on water efficiency, and minimum 25% saving with respect to base case, is mandatory for projects. ADaRSH and IAPMO – India, together serve the cause of water- efficiency, which is so critical in today’s world”... Mr. R S Prasad, Member, ADaRSH (Association for Development and Research of Sustainable Habitats), and

“We support IAPMO India’s certification of high efficient, low flow, water efficient plumbing fixtures and appliances, such as faucets, showers, urinals, water closets, ablution sprays, clothes washers, dish washers etc., which will certainly help in saving water to the tune of minimum 25%”.... Mr. Gurmit Singh, Vice Chairman, Mumbai Chapter, IGBC (Indian Green Building Council) Executive Council Member, IGBC Founding Member.



Water & Energy Audits



Palais Royale, Mumbai



ITC Windsor, Bangalore

Factors that contribute to water saving are:

- Right assumptions about the population.
- Modern techniques in landscaping, car wash and washing the paved areas, water treatment and filtration plants.
- Use of raw water, recycled water from car wash etc., reclaimed water (gray and black water treatment) and rainwater.
- Promoting use of Water Conserving Devices and Water Efficient Products (WEP).
- No leaks.

Factors that contribute to energy saving in plumbing are:

- Energy efficient plumbing products such as clothes washers, dish washers, water purifiers.
- Energy efficient water and sewage treatment plants.
- Centralized hot water supply backed by solar hot water system.
- Hydro-pneumatic system for water supply, using energy efficient VFD pumps.

Inspection body for Infrastructure Projects

- QCI approved
- Carried out as per the requirements of ISO/IEC 17020:2012.
- Design approval/ in process/ stage wise/ final Installation and commissioning of Plumbing and Mechanical HVAC-R systems, installations in infrastructure projects.

REMEMBER TO SAVE
EVERY DROP!
Thank you

