

# **Energy Efficiency** **in the context of** **Urban Planning and Building Regulations**

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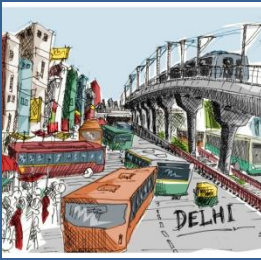


# Components of Energy Efficiency and Sustainability in Planning



## Efficient LANDUSE PLANNING

- Appropriate Use distribution: Landuse planning with efficient Layout
- Layout Designs: Area Layouts to maximize use of infrastructure
- Planning with Climate: Compact Cities and Density distribution by climates
- Right Infrastructure: Planning and laying required infrastructure by zones



## Transport and Landuse Integration

- Transit Oriented Design of Urban Landuse Plans
- Emphasis on Public Transport
- Designing High Density Urban Core with respect to Other Zones
- Integrating Last Mile connectivity and NMT with Rapid Transit



## Efficient Urban Utilities and Services

- Economical and Ecologically sensitive services design
- Recycle and reuse of wastes: 3Rs implied in processing and recovery
- Scale of Urban Facilities: Decentralized units with regular Energy Audits
- Implementation of SCADA and renewable energy in systems



## Building Regulations and Sustainable Energy solutions

- DCR in consonance with planned densities
- Usage of Local and Climate specific building materials to save active energy
- Building certification by Certified Agencies for Green Rating
- Harnessing of Renewable energy and net-metering

# Components of Energy Efficiency in Building Regulations



## ENERGY EFFICIENCY

- Climate specific building design, Locally relevant Building materials
- Minimizing Energy Needs: Passive Cooling and Natural Lighting
- Renewable Energy: Solar Energy storage and net metering
- Solar Water Heating and storage



## WATER EFFICIENCY

- Rain Water Harvesting and Ground water recharging
- Waste water re-cycling & reuse for large volumes of water discharge
- Use of “Water efficient” plumbing fixtures
- Dual piping systems of sanitation for efficient re-use of waste water



## WASTE MANAGEMENT

- Reduction of waste generation and Segregation of Waste
- Recycle and reuse of waste: Composting for manure, fly ash bricks
- On-Site Decentralized STP for recycling treated wastewater.
- Recycling of inert wastes by organised recyclers.



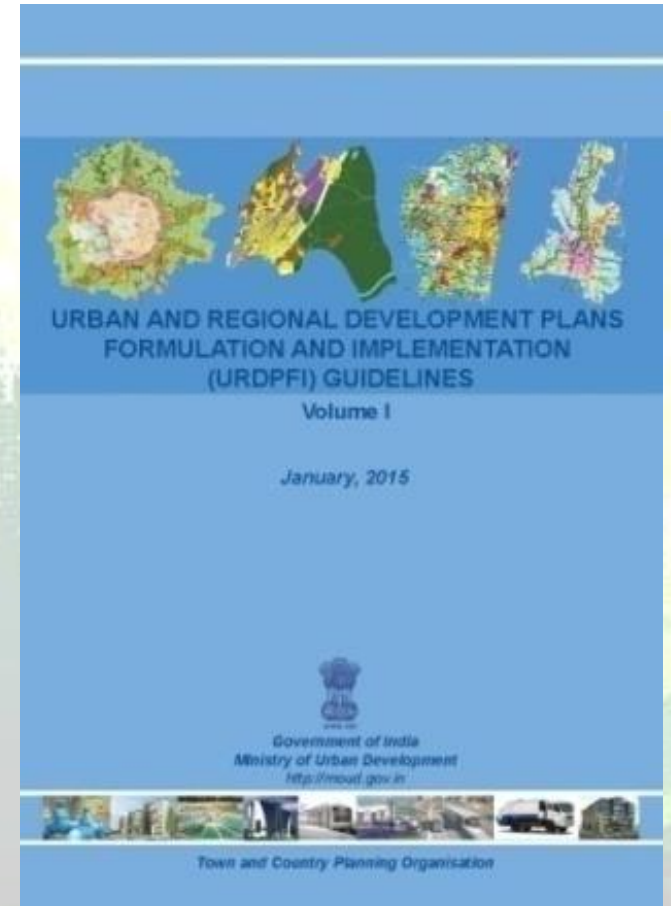
## HEAT ISLAND REDUCTION

- Green open spaces
- Green Roofs – Green Buildings
- Climate specific building materials. E.g. Pre-fabricated /recycled components
- Plant species selection based on water requirement and local conditions

# URDPFI Guidelines, 2015

The ***Urban and Regional Development Plans Formulation and Implementation (URDPFI) Guidelines, 2014*** addresses the emerging scenario in planned development of cities and towns. Planning of cities and towns is to ensure balanced development within the region with respect to emerging concerns of Energy Efficiency, Sustainable development and neo-urban concepts of living. The URDPFI is to help the Planning Departments, Development Authorities, Urban Local Bodies, and various Research Institutions to foster ***a new era of planned development***.

- New Chapter dedicated to ***Sustainability Guidelines***
  - ✓ **Sustainable Planning and Development:** Regional Planning, Compact City, Re-development /Re-densification, Open Spaces
  - ✓ **Energy Efficient planning:** Non-conventional/ Renewable energy, Energy Efficient designs and Building Performance Certification
  - ✓ **Energy Efficient Urban Transport development:** TOD, Public Transport, Reducing Fuel consumption, Promoting ITS, NMT, migration to low emission fuels
  - ✓ **Efficiency in Urban Infrastructure:** Ecological Sanitation, Reduced pumping/transport needs, Efficient waste handling, re-cycling, energy from waste.





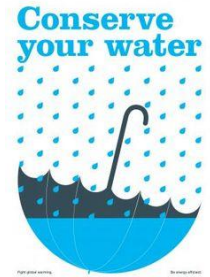


## Chapter 9 of Model Building Bye-Laws

### **Rainwater Harvesting**

Addressing **shortage of potable water, Harvesting techniques and provisions for City level and Building level rainwater water harvesting regulations and ground water recharge provisions.**

The chapter also includes the implementation and monitoring mechanisms at the Municipal Corporations and other local administrative agencies.



## Chapter 10 of Model Building Bye-Laws

### **Green Buildings and Sustainability Provisions**

Addressing **Water Conservation, Energy Efficiency in Buildings, Solar power utilization and Waste management . Including**

*Reuse and Re-cycling of Wastewater*

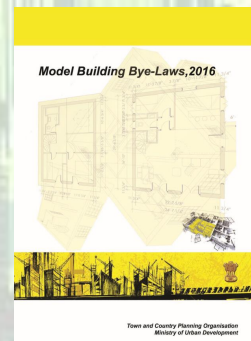
*Rooftop Solar Photo-voltaic Installation*

*Solar assisted Water heating*

*Sustainable Waste Management (Zero waste concepts on site)*

*Green Rating Systems.*

The chapter also includes City Greening guidelines, and building material use.



## Chapter 10 of Model Building Bye-Laws

### Provisions and Applicability of Sustainability Provisions

#### Provisions for Sanction

##### **1. Water Conservation and Management**

- a) Rain Water Harvesting
- b) Low Water Consumption Plumbing Fixtures
- c) Waste Water Recycle and Reuse
- d) Reduction of Hardscape

##### **2. Solar Energy Utilization**

- a) Installation of Solar Photovoltaic Panels (detailed at section 10.2.3 below)
- b) Installation of Solar Assisted Water Heating Systems

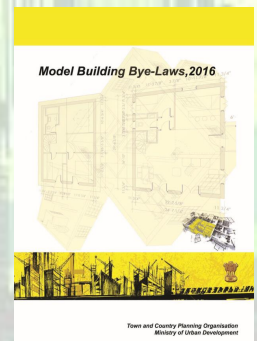
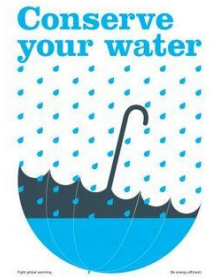
##### **3. Energy Efficiency (Concept of passive solar design of buildings) (Sep. Table)**

- a) Low Energy Consumption Lighting Fixtures (Electrical Appliances – BEE Star and Energy Efficient Appliances)
- b) Energy Efficiency in HVAC systems.
- c) Lighting of Common areas by Solar energy/ LED devices.

##### **4. Waste Management**

- a) Segregation of Waste
- b) Organic Waste Management

In case owners of properties desire to procure green building ratings from one or more rating bodies, they may suitably incorporate any other provisions if required and additional incentive FAR as per Master Plan may be availed.





## **Chapter 14 of Model Building Bye-Laws**

### **Climate resilience in Construction: Environmental Clearances for sanction**

*Addressing Environmental conditions of*

*Natural Drainage*

*Water Conservation*

*Solid Waste Management*

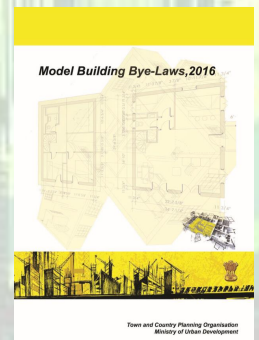
*Energy Efficiency in Buildings and Construction processes*

*Air Quality and Noise prevention*

*Green Cover in sites*

*The chapter also includes the Class Wise minimum standards of conditions of implementation for 3 classes (A: 5,000-20,000sqmt, B: 20,000-50,000sqmt and C: 50,000-1,50,000sqmt) of Built-up area of projects for Building approvals at the Municipal Corporations and other local administrative agencies.*

The Model BBL also provides a flexible framework for the State Governments to selectively incentivize or enforce the provisions of Green Buildings / Sustainable provisions suiting local conditions of building practice.





**THANK YOU FOR YOUR KIND ATTENTION**

