

# Energy Efficiency

## Global Challenges and Solutions



Gabriel Iqbal 1996

Study conducted with students from  
Carlton Bolling College, Bradford, UK

- **Recycle used paper and ensure every bit is recycled.**
- **It takes 10 times LESS ENERGY to produce paper from used one.**

# Recycling is an excellent way of saving energy and conserving the environment.

Did you know that:

- 1 recycled tin can would save enough energy to power a television for 3 hours.
- 1 recycled glass bottle would save enough energy to power a computer for 25 minutes.
- 1 recycled plastic bottle would save enough energy to power a 60-watt light bulb for 3 hours.
- 70% less energy is required to recycle paper compared with making it from raw materials.

# WHY ENERGY EFFICIENCY?

- Country facing power shortages
  - Peak Shortage – 13%
  - Average Shortage – 8%
- Additional power required by 2012, 1 lakh MW  
Approximately 8,00,000 crores investment
- **India's energy Intensive for unit of GDP is higher by 3.7 times of Japan, 1.48 times of Asia & 1.5 times of USA**
- Higher wastage of energy.
- **Very high energy saving potential.**

## **You can directly contribute by:**

- 1. By switching of lights when not required.**
- 2. By using cloth/jute bags instead of plastic bags.**
- 3. Using both side of paper.**
- 4. Using refills instead of buying a new pen.**
- 5. Buying materials in bulk/without packing**
- 6. By growing plants.**
- 7. By being vegetarian also you save energy**
- 8. By encouraging foods made of jowar, bajra, instead of rice.**
- 9. By not wasting food.**

**Water is precious - it's a miracle**

**Water is precious - it's life**

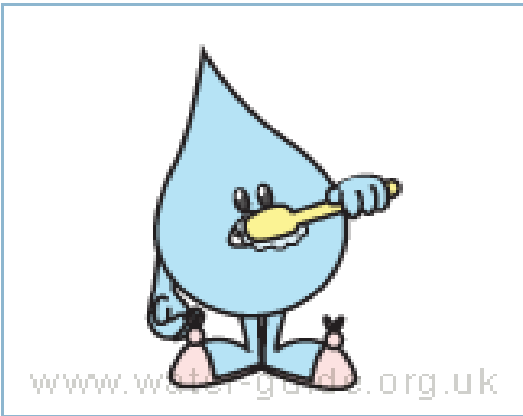
**Water is precious - let's keep it clean**

**Water is our most precious drink**

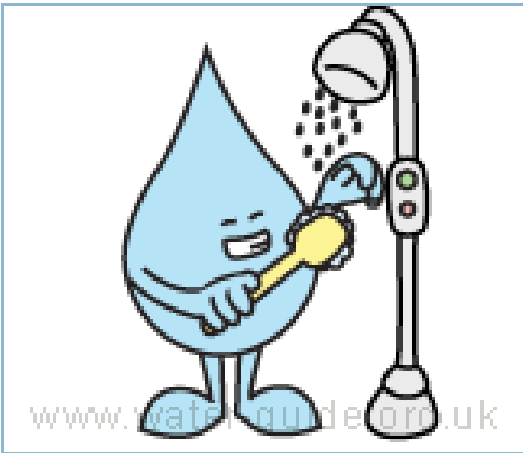
**Water is our treasure – Let's preserve it**

**Water is healing**

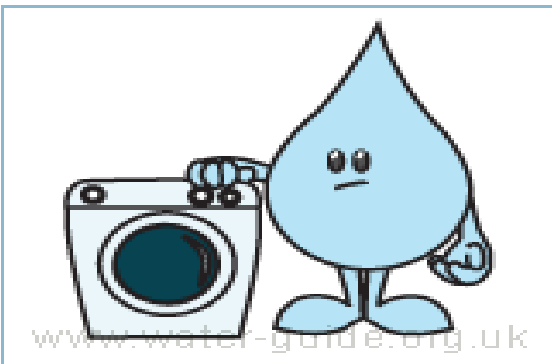
**People use water in many different ways, we need it to survive, and if it wasn't for the water cycle cycling through, we probably wouldn't exist**



Turn off tap while cleaning your teeth, shaving or washing your face. You can waste can up to 9 litres a minute by just letting the water pour down the sink.



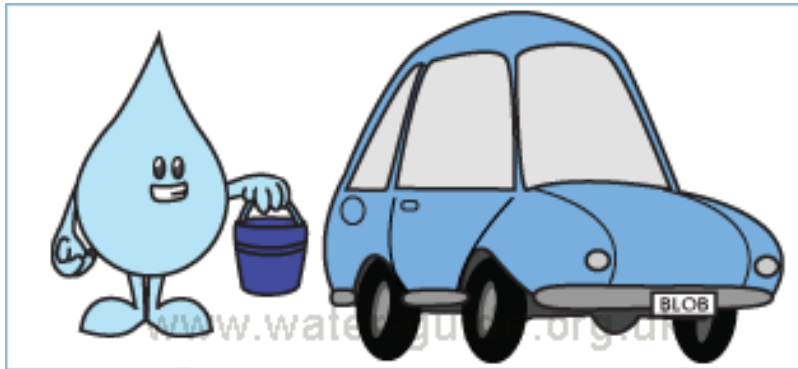
Take a short shower rather than a bath could save you up to 400 litres a week. If you do have baths, just half fill them.



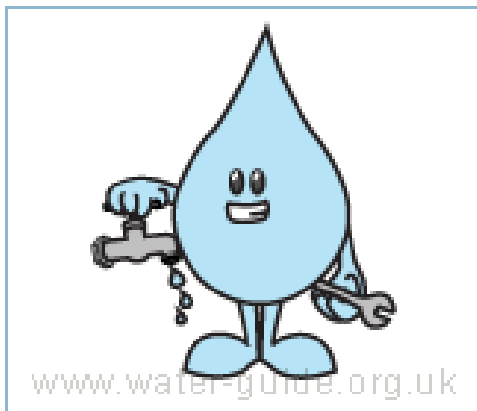
Only use the washing machine and the dishwasher when you can put on a full load. It wastes both water and energy to run only a half full machine



Use a broom and bucket of water for washing down the patio rather than a steady flow of water from the hose.



Use a sponge and bucket of water to clean your car or if you use the hose, ensure you use a shut off nozzle so the water is not constantly running.



Fix any dripping tap, you can waste 90 litres a week



# Equipment

# Power Consumption in Watts

**Zero watt bulb**

**12 W**

**Mosquito Repellents**

**10 W**

**Voltage stabilizer**

**25 W**

**UPS Inverter**

**40 W**

**Cable set top box**

**25 W**

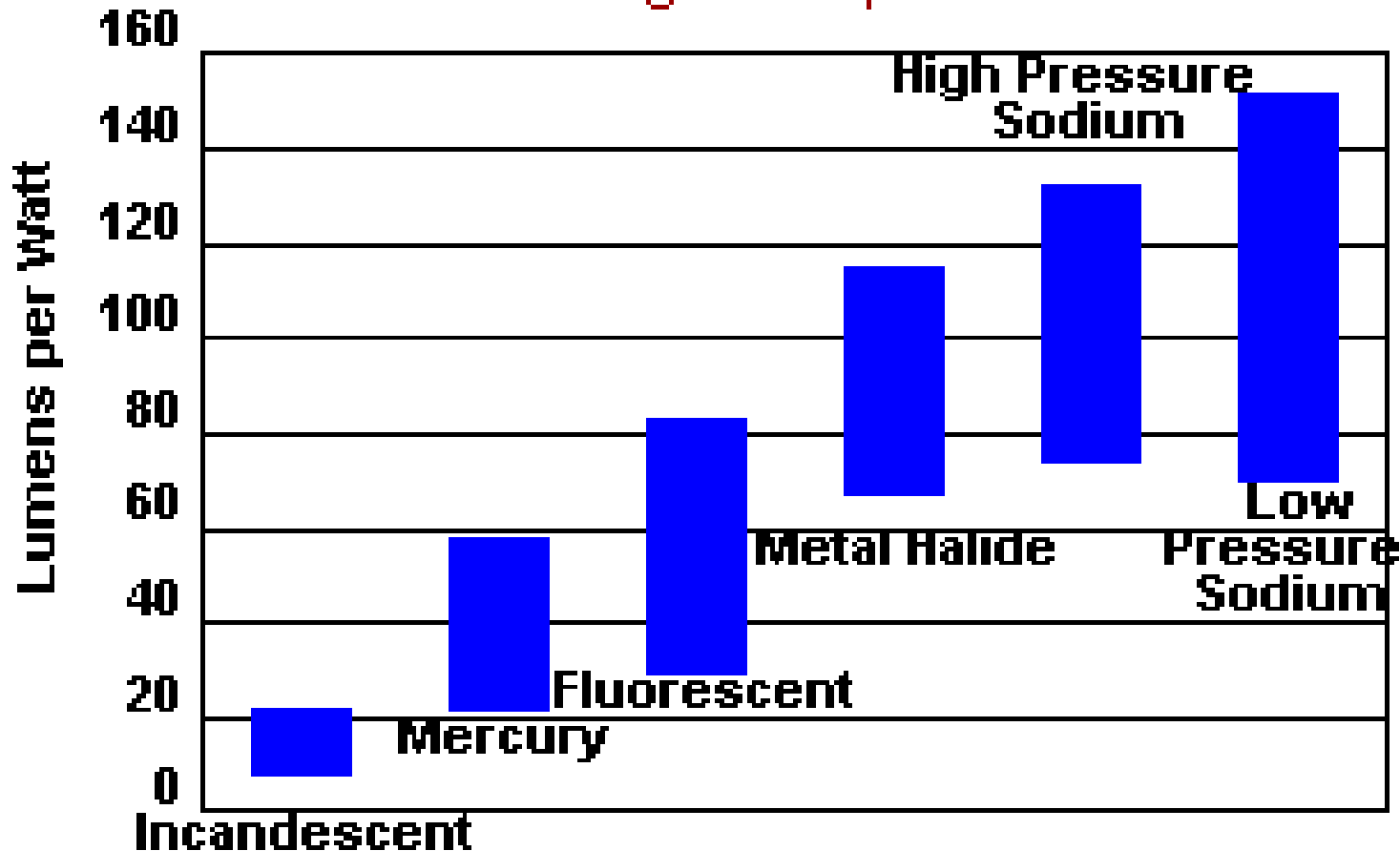
## Equipment running in stand by mode

## Power Consumption in Watts

|                             |             |
|-----------------------------|-------------|
| <b>Compact audio system</b> | <b>27 W</b> |
| <b>CD player</b>            | <b>12 W</b> |
| <b>Microwave oven</b>       | <b>6 W</b>  |
| <b>Inkjet printer</b>       | <b>5 W</b>  |
| <b>TV</b>                   | <b>22 W</b> |

# Energy Efficient Lighting

Light Output



**Fluorescent Lighting is 400% more energy efficient than Standard Incandescent Bulbs.**

Gabriel Iqbal (1996) Energy Efficiency  
Global Challenges and Solutions.

➤ **Public Transport needs three times less energy and emits three times less greenhouse gases than private car traffic. A study conducted for 50 cities worldwide has revealed.**

➤ **In most developing cities, average trip distances are short. Often over 60% of the trips are under 3 km. Thus there is a tremendous potential to increase the share of non-motorised mode of transport.**

**In the past 100 years the concentration of carbon dioxide in the atmosphere has increased by 25%.**

**Global consumption of fresh water is doubling every twenty years.**

**The Earth's forest, freshwater and marine environments have reduced by 30% in thirty years.**

**The Mercury from a single fluorescent tube will pollute 30,000 litres of water.** The UK currently discards 300 million fluorescent tubes each year. In the UK we currently recycle 3.5% of fluorescent tubes compared to 72% in Scandinavia

In a sustainable society, nature is NOT subject to systematically increasing:

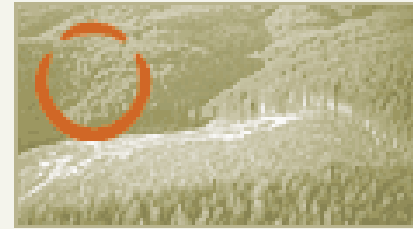
and in that society ...



(1) concentrations of substances extracted from Earth's crust



(2) concentrations of substances produced by society



(3) degradation by physical means



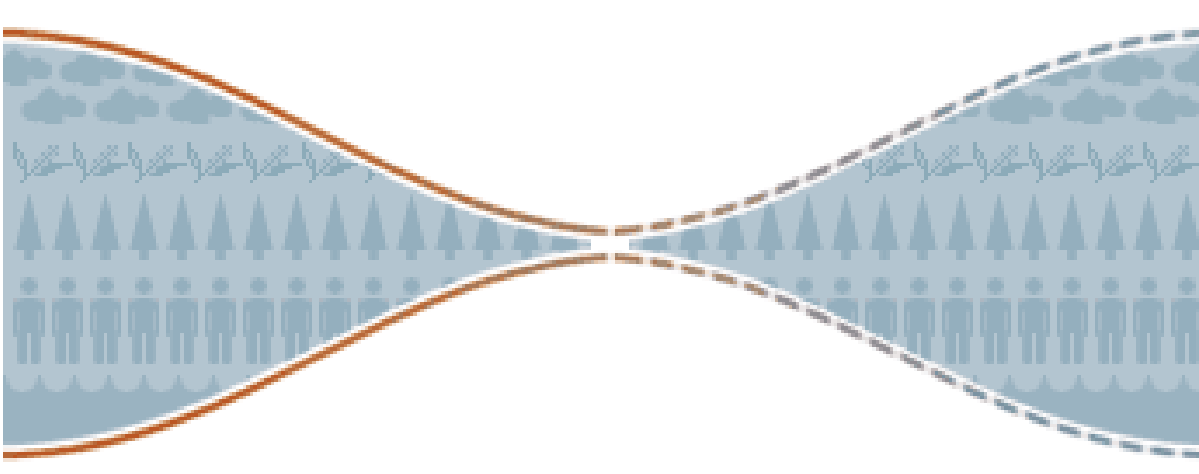
(4) people are not subject to conditions that systematically undermine their capacity to meet their needs

RESOURCES →

Life supporting resources are decreasing...

... demand for resources is increasing.

DEMAND →



→ Through innovation, creativity, & the unlimited potential for change we can open the walls of the funnel.

## EMBEDDED ENERGY (TYPICAL HOUSE)

|                  |     |
|------------------|-----|
| Floor            | 29% |
| External Wall    | 27% |
| Roof Structure   | 14% |
| Windows          | 8%  |
| Substructure     | 7%  |
| Ceiling Finishes | 1%  |
| Floor Finishes   | 4%  |
| Internal Walls   | 1%  |
| Wall Finishes    | 8%  |

|                        |            |
|------------------------|------------|
| <b>GLOBAL</b>          |            |
| <b>FRESH WATER USE</b> |            |
| <b>DOMESTIC</b>        | <b>8%</b>  |
| <b>INDUSTRY</b>        | <b>23%</b> |
| <b>AGRICULTURE</b>     | <b>69%</b> |



## WATER USE

|            |     |
|------------|-----|
| WC         | 33% |
| Bathing    | 17% |
| External   | 3%  |
| Kitchen    | 16% |
| Wash basin | 9%  |
| Others     | 1%  |

## ENERGY USE

|                    |     |
|--------------------|-----|
| Water Heating      | 12% |
| Cooking Appliances | 15% |
| Cooking Gas        | 1%  |
| Pumps              | 18% |
| Lighting           | 17% |
| Air Conditioning   | 37% |